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University of Illinois Bulletin

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Announcement
of the
Summer Session

June 16 to August 9, 1924

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University of Illinois

ANNOUNCEMENT

of the

SUMMER SESSION

June 16 to August 9, 1924

General Announcements
Faculty *and* Courses

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UNIVERSITY OF ILLINOIS

URBANA, ILLINOIS

UNIVERSITY OF ILLINOIS

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Phineas Lawrence Windsor, Director, Library School
Frederic Benjamin Stiven, Director, School of Music
Harry Gilbert Paul, Professor of the Teaching of English

CALENDAR

Summer Session, 1924

June 16, Monday—Registration Day
June 17, Tuesday, 8 a. m.—Instruction begun
June 19, Thursday—Assembly in Auditorium
June 23, Monday, 5 p. m.—Latest day for rebates in full
July 12, Saturday, 12 a. m.—Latest day for rebate of one-half fees
July 26, Saturday—End of Six Weeks' Courses
August 8 and 9, Friday and Saturday—Final Examinations

First Semester, 1924-25

September 15-19, Monday to Friday—Entrance Examinations, Urbana and Chicago
September 22-23, Monday and Tuesday—Registration Days
September 24, Wednesday, 8 a. m.—Instruction Begun; 4 p. m.—Freshman Convocation
September 29-October 4, Monday to Saturday—Examinations for Removal of Conditions, Chicago Professional Schools
October 6, Monday, 8 a. m.—Registration—Chicago Professional Schools

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SUMMER SESSION, 1924

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CARD, LESLIE ELLSWORTH, Ph.D., *Professor of Poultry Husbandry*
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Hopkins, B. Smith, Ph.D., *Professor of Inorganic Chemistry*
Hormell, Orren C., Ph.D., *Professor of History and Political Science, Bowdoin College*
Horn, John Louis, Ph.D., *Professor of Education, Mills College*
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Krusé, Cornelius Francis, Ph.D., *Professor of Philosophy, Wesleyan University*
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Sergeant, Amy Gertrude, A.M., *Assistant in Public Speaking*
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Shumway, Waldo, Ph.D., *Associate Professor of Zoology*
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Stevens, Frank Lincoln, Ph.D., *Professor of Plant Pathology*
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Trimble, Harold D., A.M., *Assistant High School Visitor*
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Uhlendorf, Bernhard Alexander, Ph.D., *Associate in German*
Van Horne, John, Ph.D., *Assistant Professor of Romance Languages*
Wagner, Carlos J., *Instructor in Physical Education*
Wall, Clifford Nathan, M.S., *Assistant in Physics*
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Watson, Floyd Rowe, Ph.D., *Professor of Physics*
Weirick, Bruce, Ph.D., *Associate in English*
Williams, Elmer Howard, Ph.D., *Assistant Professor of Physics*
Williams, Lewis Ward, A.M., *Instructor in Education; Principal, University High School; Secretary, Appointments Committee*
Wimer, David Cleveland, M.S., *Assistant Professor of Soil Physics*
Windsor, Phineas Lawrence, Ph.B., *Director of Library and Library School*
Winter, Sidney Graham, M.S., C.P.A., *Instructor in Accountancy*
Zuppke, Robert Carl, Ph.B., *Professor of Physical Education*

GENERAL INFORMATION

Location of the University of Illinois

The University of Illinois is situated in Champaign County about fifty miles northeast of the geographical center of the State. It is 126 miles south of Chicago, 118 miles west of Indianapolis and 164 miles northeast of St. Louis. The campus of the University lies partly within the corporate limits of the city of Urbana and partly within the corporate limits of the city of Champaign. Urbana and Champaign, with a population of about 30,000, are in the heart of the "Corn Belt" and form the business and social center of a rich farming community. The University is connected with neighboring cities in Illinois, and also with St. Louis, by the electric interurban lines of the Illinois Traction System. Champaign may be reached from Chicago and the north and from points in the south by the Illinois Central Railroad. The Wabash and the "Big Four" have stations in both Champaign and Urbana.

Buildings and Grounds

The land occupied by the University includes the main campus, 303 acres, the Chicago campus, two and one-fifth acres, the experimental farms at Urbana-Champaign, 934 acres, experiment fields outside Champaign county, 714 acres, timber reservations, 60 acres, and trust farms, 346 acres—a total of 2359 acres. There are about seventy buildings on the campus at Urbana-Champaign.

Libraries

The University library, at Urbana, contains 520,000 volumes, and receives over 3,500 periodicals; the current numbers of many of these periodicals are kept in the public reading room. The library of the State Laboratory of Natural History contains 10,500 volumes and 54,000 pamphlets.

The library is housed, for the most part, in the Library building, and is for the use of the whole University. All students have the direct use of 10,700 volumes in the reading rooms, and in addition graduate and advanced undergraduate students have the use of the departmental libraries. Twenty-one seminar and departmental collections are maintained in various buildings on the campus; six of these contain over 20,000 volumes each, and all have convenient facilities for study.

Museums

A number of museums containing collections of varied interest are housed in different buildings on the campus. These collections include art works, archeological remains, and objects showing the development of Oriental and European culture. The departmental scientific laboratories make provision for research, instruction in drill-courses and demonstrations in the lecture-room. The herbarium of the Department of Botany contains over 100,000 sheets of mounted specimens. The Entomology collections include a reference series of 6,400 specimens. The Department of Geology has adequate working collections, including exhibits of gems and precious stones. The Geography and Zoology exhibits are to be found in the Natural History Building. For its courses in industrial economics and commerce the University has a collection of the materials of commerce. The Colleges of Engineering, Education, Agriculture, and the Library School also maintain exhibits.

The Summer Session

The Summer Session of the University of Illinois for 1924 will open on June 16 and close on August 9, making a term of *eight weeks* or one-half a semester, except for students taking courses in physical education for men, or athletic coaching and certain elementary courses in Library Science, for whom the term is *six weeks* from June 16. The opening day will be devoted to registration. The final examinations will be held on Friday and Saturday of the last week.

All of the courses, except those mentioned above, will extend through the eight weeks. Students who wish to remain the six weeks only, however, may obtain from the Director of the Summer Session a certificate for such attendance, but university

THE MUSIC BUILDING—SMITH MEMORIAL

credit will not be given for six-weeks' courses, except for those in physical education for men and in athletic coaching.

The number of semester hours' credit which may be earned in each course is stated in the descriptive outline given later in this announcement. Students may register for courses aggregating eight hours or less.

Purpose

The Summer Session is an organized integral part of the University year, numerous courses being offered by departments in the Colleges of Liberal Arts and Sciences, Commerce, Agriculture, Engineering, Education, Law, and in the School of Music and the Library School. All courses may be counted toward either an A.B., B.S., LL.B., J.D., or B.L.S. degree, or toward a master's degree, unless otherwise specified. By attending two Summer Sessions a regular student may secure his degree a half year earlier than he otherwise can.

Students who have just graduated from an accredited high school may matriculate in the Summer Session and obtain credit for a half-semester. Pre-medical students are strongly urged to do this and to register for chemistry or zoology, mathematics, rhetoric, or other prescribed pre-medical subjects.

One of the primary purposes of the Summer Session is to meet the needs of the teachers in the public schools, who wish to spend a part of the summer vacation in serious study or investigation. Numerous courses are designed particularly for high-school teachers, supervising officers, teachers of special subjects (agriculture, art, manual training, music, industrial education, etc.), librarians and coaches of athletic teams; graduate courses are offered for college instructors, school supervisors, and principals who are working for advanced degrees.

Admission

It is important that former students who expect to re-enter notify the Registrar's Office to that effect in advance of the opening of the session and that new students send their credentials to that office at least one week in advance of registration. By following these instructions the actual process of registering will be much simplified for these two groups of students.

Admission in regular status to courses in the Summer Session for which university credit is granted is limited to students who could be regularly admitted into the colleges of the University (Liberal Arts and Sciences, Commerce, Engineering, Agriculture, Education, Law, Music School, or Library School) in which they would be registered in the winter session.

In order to meet in full the entrance requirements for any one of these undergraduate colleges, a student must be a graduate of an accredited high school (or in lieu of such graduation, must pass entrance examinations in five units, including English composition, 1; algebra, 1; and three others to be designated by the University authorities in each case), and must obtain credit, either by passing entrance examinations or by presenting certificates of work completed in accredited secondary schools or other recognized schools, for 15 units of high-school work, or the equivalent, in subjects accepted for admission to the University, including in the case of each college certain subjects especially prescribed for admission to that college.

Admission to courses which give university credit, as *unclassified students, not candidates for a degree*, may be granted to persons 21 years of age or over, subject to the general regulations of the University relating to unclassified students.

(1) The subjects prescribed for admission to the *College of Liberal Arts and Sciences* for the *General Curriculum*, the *Curriculum in Journalism*, the *Pre-Legal Curriculum* and the *Curriculum in Home Economics* are: English, 3 units; algebra, 1 unit; plane geometry, 1 unit; laboratory science, 1 unit; Latin, Greek, French, German, or Spanish, 2 units (both units in the same language). Seven elective units are required to make up the total of 15 units.

(2) For the *College of Liberal Arts and Sciences*, for the *Pre-Medical Curriculum*, the prescribed subjects are English, 3 units; algebra, 1 unit; plane geometry, 1 unit; laboratory science, 1 unit; Latin, Greek, French, or German, 2 units (both

units in the same language); history or civics, 1 unit. Six elective units are required to make up the total of 15 units.

(3) For the *College of Liberal Arts and Sciences*, for the curriculums in *Chemistry* and *Chemistry Engineering*, the prescribed subjects are: English, 3 units; algebra, 1½ units; plane geometry, 1 unit; laboratory science, 2 units (one of which must be Chemistry); German or French, 2 units; (both units in the same language). Five and one-half elective units are required to make up the total of 15 units.

(4) For the *College of Engineering*, the prescribed subjects are: English, 3 units; algebra, 1½ units; plane geometry, 1 unit; solid and spherical geometry, ½ unit; laboratory science, 1 unit. Eight elective units are required to make up the total of 15 units.

(5) For the *College of Agriculture*, the prescribed subjects are: English, 3 units; algebra, 1 unit; plane geometry, 1 unit; laboratory science, 2 units. Eight elective units are required to make up the total of 15 units.

(6) Students who can meet the prescriptions for any of the other colleges as outlined above may be admitted to the *College of Commerce and Business Administration*.

(7) For the *College of Education*, sixty hours of university credit, except for the curriculums in *Athletic Coaching* and *Industrial Education*. Students who can meet the prescriptions for any of the other colleges as outlined above in paragraphs 1-5, may be admitted to these curriculums.

(8) For the *School of Music*, the prescribed subjects are as indicated in paragraph one above, with the addition of 2 units in Music. Five elective units are required to make up the total of 15 units.

(9) Admission to the *College of Law*, is conditioned on the completion of two years of work in a college of Liberal Arts and Sciences of recognized standing.

(10) Admission to the eight-weeks' course in the *Library School* is conditioned on the completion of four years of college work in the Liberal Arts and Sciences.

A STUDENT WHO TRANSFERS FROM ANOTHER COLLEGE OR UNIVERSITY MUST PRESENT A LETTER OF HONORABLE DISMISSAL, AND TRANSCRIPT OF RECORD, FROM THE INSTITUTION PREVIOUSLY ATTENDED.

Registration

Registration will occur on Monday, June 16, from 8 a. m. to 12 and from 1 p. m. to 5. All former students who have notified the Registrar in advance that they intend to register and all new students who have submitted their credentials and received from the Registrar a permit to enter as a regular student, or from the Director of the Session a permit to enter as an unclassified student, will find their study-lists at the main entrance to the Library Building according to the following plan of hourly registration:

Students whose names begin with S through Z, 8 a. m.; L through R, 9 a. m.; E through K, 10 a. m.; A through D, 11 a. m. No student will be allowed to register earlier than the hour specified for his group.

Former students who have not indicated to the Registrar in advance their intention to enter, and new students under twenty-one years of age who have not received from the Registrar a permit to enter, go first to the Registrar's Office, 156 Administration Building. Such students may go to this office at any time without respect to the alphabetical registration indicated above. New students over twenty-one, without permits to enter, desiring to take undergraduate courses should see the Director of the Session in the Library Building. Such students will be admitted to the Library Building for this purpose at any time. The permit should then be filed with the Registrar's clerk at the Loan Desk. The study-list will be issued according to the hourly registration schedule indicated above.

Students who wish to register for advanced degrees will first secure their study-lists at the Registrar's office, 156 Administration Building.

The Bachelor's Degree

All the undergraduate work offered in the Summer Session carries regular university credit. By careful selection of courses the graduation requirements of the Colleges of Liberal Arts and Sciences and of Education may be met in large part by

Summer Session work. In the Colleges of Engineering and Agriculture the non-technical requirements and a part of the technical engineering or agricultural requirements may be covered in the Summer Session. For the detailed requirements of the several colleges the student should consult the Annual Register of the University under the head of the college in which he is interested. *A student who is matriculated in one of the undergraduate colleges of the University* should also check over the work he has had and plan his future course in consultation with the dean or assistant dean of his college.

For the College of Liberal Arts and Sciences—Dean Babcock, Room 304, University Hall.

For the College of Commerce and Business Administration—Dean Thompson, Room 104, Commerce Building.

For the College of Engineering—Assistant Dean Jordan, Room 300, Engineering Hall.

For the College of Agriculture—Assistant Dean Rankin, Room 100, Agriculture Building.

For the College of Education—Dean Chadsey, Room 203, University Hall.

For the College of Law—Dean Harno, Room 206, Law Building.

For the Library School—Director P. L. Windsor, 318 Library Building.

General Assembly in Auditorium

On the first Thursday of the Session, June 19, at 4 p. m., an Assembly will be held. All students and members of the instructional staff are requested to attend. At this time general announcement will be made, concerning lectures, entertainments, and other non-academic activities.

Graduate Work in the Summer Session

In recent summer sessions the University has placed increasing emphasis on graduate courses leading to the master's degree. An attempt is made to vary the graduate offerings from year to year so that advanced students who attend the University summer after summer may continue to find acceptable work in their chosen fields.

Graduate students in the Summer Session are subject to the same scholastic requirements as those in the regular University year. *Their study-lists must be approved by the Dean of the Graduate School, or his representative*, in 109 Commerce Building. Attendance on four summer sessions, or one semester and two summer sessions, is considered the equivalent of one year in residence. If in these sessions the required amount of work is properly done a master's degree may be earned in this way.

No course offered in the Summer Session may be taken for credit towards a higher degree unless it is specially described in the Summer Session circular as accepted for that purpose.

In certain cases it is possible for a graduate student to complete the thesis requirements for the master's degree to the extent of the last fourth of the total requirement for the degree under a leave of absence. This privilege may be granted in the event that the student is able to take advantage of opportunities for research and investigation that are not afforded in the University community. Superintendents, principals, and class-room teachers frequently find it possible to carry on investigation in connection with their school work. There are, for example, numerous problems of school administration and of teaching for which the public school itself forms the only available "laboratory." Where the investigation of such problems is prosecuted under the direction of a university department, it may be possible, on individual petition beforehand, to count the work toward the master's degree.

Students working for their master's degrees in the Summer Session must announce their thesis subjects not later than the beginning of their third session in residence.

For further information about advanced degrees and the regulations therefor, the Graduate School circular should be consulted.

Courses in Library Science

Courses for the training of librarians have been offered since the summer of 1911, and two distinct groups of courses will be offered in 1924.

(1) For College graduates, with or without library experience, there are offered eight-weeks' courses selected from the two-year curriculum of the Library School, counting toward the B.L.S. degree. A student completing the courses offered in 1923, and also those to be given in 1924, will have completed the first semester's work in the Library School.

(2) For high-school graduates who are employed as librarians or library assistants, and for certain others who have completed one full year of study in a college or normal school, six-weeks' courses are offered which are more elementary and not counted toward the B.L.S. degree. Problems confronting Illinois libraries will be given special consideration in these six-weeks' courses, and until May 1, only applicants from Illinois will be accepted for admission. After that date those from other states will be admitted, if there is room.

Application blanks for admission must be secured, and these should be filled out and sent to the Director of the School together with such additional statements as the candidate may offer, showing his qualifications for admission. The application must be filed sufficiently early to enable the School to receive replies from librarians and others who have personal knowledge of the applicant.

For further information than that contained in the description of courses, (pages 32 and 33) address the Director of the University of Illinois Library School, Urbana, Illinois.

Courses for Athletic Coaches

Courses for Athletic Coaches were established in connection with the Summer Session of 1914 under the general direction of George A. Huff, Director of Physical Education for Men, to meet the growing demand from coaches and physical education instructors of high schools, colleges and universities for further training in the athletic sports and the various branches of physical education.

The courses are taught by the varsity coaches of Illinois' athletic teams, and other regular members of the Physical Education Department. A new feature of the 1923 Summer Course will be repeated this summer. Gilmour Dobie, football coach at Cornell University, Ithaca, New York, will give a football course in addition to the one offered by Mr. Zuppke.

Students may devote either their whole time or part of their time to the coaching courses. Enough work is offered to cover two summers. Those who desire to spend that amount of time might follow the suggested program: *First Summer:* Football Theory by Dobie, Basketball Theory, one Football Practice Section, one Basketball Practice Section; Training Practice and Theory, Calisthenics, Mass Physical Activities, Gymnastic Stunts, Physical Diagnosis, School Program of Physical Education, and Swimming; *Second Summer:* Football Theory by Zuppke, Track Theory, Baseball Theory, one Track Demonstration Section, one Baseball Practice Section, Organization and Administration, Medical Gymnastics, and Community Recreation. This may be varied according to the coach's special interests, as even two summers' work will not include all the courses offered.

A student desiring to specialize in football or basketball, or any other major sport, may do so by taking two practice sections as well as the theory course. The work is planned so that a man may take lectures on the sport in which he is most proficient, and concentrate his attention on the subjects which he does not know so well. An additional course is offered in baseball, Baseball Discussion, for the interest of those who desire further theoretical work.

Detailed information regarding the courses for Athletic Coaches may be found in a special circular which will be sent on application to George A. Huff, Director, Summer Coaching Course, Men's Gymnasium, Urbana, Illinois.

Summer Session Band

Professor Albert A. Harding, Director of the University of Illinois Bands, will form a band for Summer Session students. Those who have heard the University of Illinois Concert Band on tour will appreciate the quality of training given at the

A SCENE ON THE CAMPUS

University. Candidates should bring their instruments with them, as the University only furnishes large instruments and those of an unusual character. Tryouts will be held during the first week of the Session and application blanks may be secured at the Band Office, 217 University Hall. Rehearsals will be held twice a week with an extra session to give prospective leaders special instruction in methods of band organization and conducting. Time for individual consultation and coaching should also be allowed. After a few weeks of rehearsal the Summer Session Band will give informal campus concerts one evening a week.

Those desiring to gain experience in conducting musical organizations are thus afforded opportunity for instruction and laboratory practice.

Lectures, Receptions, Entertainments, Athletics

In addition to the regular class work, the Summer Session provides a number of incidental exercises which give an atmosphere differing but little from that of the other sessions of the year: Receptions given to students; entertainments, debates, teachers' conferences, and clubs arranged by the students themselves; games and athletic contests: Dramatics, exhibits of folk and interpretive dancing, band concerts; and the general lectures given by members of the University departments and by men from other institutions.

The song services will be conducted under the direction of Director Frederic B. Stiven of the School of Music. All students and faculty members are cordially invited to take part in the singing on the Auditorium steps Wednesday evenings at 7:00.

Director Stiven will give a series of organ recitals during the Session.

Altho both the men's and women's gymnasiums will be used in some parts of the regular class work in Physical Education, they are nevertheless open to students not registered in those courses, for the purpose of general recreation and exercise. Both of the gymnasiums contain swimming pools, shower baths, lockers, and dressing rooms. Students are charged a small sum for a locker. The tennis courts, general athletic fields, and golf course on the University campus are open to the student body.

The new swimming pool for women is attractive and commodious, measuring 75 ft. by 24 ft., with an adequate number of showers and dressing rooms. There will be beginning, intermediate and advanced classes, meeting five days a week. Miss Pauline Hodgson, instructor in Physical Education at the University High School, University of California, will have charge of instruction. A student must regularly register for swimming, arranging with the instructor for the hour. The regulation grey jersey tank suit is required.

Board and Lodging

The fact that the larger part of the usual University community will be away at the time of the Summer Session will make lodgings and boarding accommodations plentiful. The Young Men's and Young Women's Christian Associations of the University will prepare a list of boarding places which can be recommended, and they will aid students in securing desirable locations.

Board may be obtained at from $6.00 to $7.50 a week.

Double rooms near the University, if occupied by two persons, may be had at from $8.00 to $12.00 a month.

The Woman's Residence Hall is located on Nevada Street, north of and adjacent to the new athletic field for women. There are both double and single rooms, the basement containing a large dining room in each wing overlooking the sunken garden in the court. In the center of the first floor is a large living room with adjoining parlors. At the south end of each wing on each floor is a commodious sleeping porch. Women students occupying single rooms may obtain room and board at the Residence Hall for $80, covering the eight-weeks' Summer Session; for those occupying double rooms the charge is $70. Applications for rooms should be addressed to the Dean of Women, Woman's Building.

The Illinois Union Building, formerly the Young Men's Christian Association Building, has accommodations for ninety-one men students, and is under University

supervision. There are shower baths on each floor. Fourteen of the rooms have lavatories and six have private baths. The rooms are adequately furnished. The price of the rooms for the entire Summer Session ranges from $22.00 for a one-man room to $60.00 for a three-man suite with bath. There is a barber shop and tailor shop in the basement. The Illinois Union club rooms are located on the first floor. The building is situated at the corner of John and Wright Streets, immediately adjacent to the campus. Applications for or inquiries regarding rooms should be addressed to the Illinois Union Building.

Fees

All fees are due upon registration.

For students residing in Illinois an incidental fee of twenty dollars (thirty dollars for students in the College of Law) is required. For students not residing in the State of Illinois the incidental fee is thirty dollars (forty-five dollars for students in the College of Law). This entitles one to admission to regular courses and to all special lectures. An extra laboratory fee is charged in some courses for materials used. Any single course, counting not more than two and one-half credit hours, may be taken by Illinois students for a fee of ten dollars, fifteen dollars by students not residing in the State, and the laboratory fee, if there be any in connection with the course taken.

In addition to the above general fees students registering in courses in applied music (voice, piano, violin, violoncello, organ, or band instruments) pay special music fees as follows:

For one lesson a week	$ 6.00
For two lessons a week	10.00
Piano for practice one hour a day for the Session	1.50
Additional hours at the same rate.	
Organ practice one hour a day for the Session	10.00

All high-school teachers and all librarians in Illinois, all other teachers in the State who are qualified to matriculate in the University as regular students, graduates of the Illinois State Teachers' Colleges, class of 1924, persons (otherwise qualified) who have not been teachers the past year but who are under contract to teach in the State during the coming year, librarians and library assistants in Illinois libraries and persons under contract to serve in such positions, and who can matriculate in the University, shall be entitled to a scholarship of twelve dollars which reduces the incidental fee for them from twenty dollars to eight dollars.

A person who wishes to take advantage of the scholarship privilege must present to the Registrar prior to June 1, 1924, a statement from the board of education or library board employing him, to the effect that he has either been employed as a teacher or librarian during the past year or is under contract for such service during the coming year. A graduate of a teachers' college (class of 1924) must present either a diploma or a written statement from the president of the teachers' college certifying that he is a graduate of this year's class.

Application blanks for scholarships may be obtained by addressing the Registrar.

Information

For further information on any matter connected with the Summer Session, address the Registrar of the University, or

CHARLES ERNEST CHADSEY,
Director of the Summer Session,
203 University Hall,
Urbana, Illinois.

DESCRIPTION OF COURSES

Explanation

The arrangement of subjects in the following description of courses is alphabetical. The connections of allied departments are indicated by cross references.

"S" (summer) which is prefixed to each of the courses offered is the sign used to distinguish the Summer Session courses from those having the same number offered during the regular University year. Following the description of each course will be found a statement of requirements for admission to that particular course and a statement of the equivalency of credit for such course as related to the course given in other sessions of the University. For example, the prerequisite for Mathematics 9 is Mathematics 7. This means that Mathematics 7 must be completed before Mathematics 9 may be taken. Since the Summer Session courses do not invariably cover the same ground as courses similarly numbered in the regular sessions of the University, the equivalency is sometimes noted as partial rather than full.

If a course not required for graduation is selected by fewer than five students, it may be withdrawn.

Graduate courses are numbered upwards from 100. Such courses are open only to graduate students.

Credit is reckoned for the undergraduate students in *semester hours* or simply *hours*. An *hour* represents one classroom period a week for one semester requiring 2 hours preparation on the part of the student, or three hours in laboratory, shop, or drawing room. The number of credit hours for which each course counts is shown after each course by the figure in parenthesis, for example, Education S25. (3).

The following abbreviations are used to designate the different buildings used during the Summer Session.

Agricultural Building	Agr.
Applied Mechanics Laboratory	L. A. M.
Armory	Arm.
Armory Annex	A. A.
Astronomical Observatory	Obs.
Ceramics Laboratory	Cer.
Chemistry Building	Chem.
Commerce Building	Com.
Electrical Engineering Laboratory	E. E. L.
Engineering Hall	E. H.
Farm Mechanics Building	F. M.
Floricultural Greenhouses	F. G.
Highway Engineering	H. L.
Horticultural Building	H. B.
Library	Lib.
Lincoln Hall	L. H.
Mechanical Engineering Laboratory	M. E. L.
Men's Gymnasium	Gym.
Metal Shops	M. S.
Mining Engineering Laboratory	Min. L.
Natural History Hall	N. H.
Physics Laboratory	P. L.
Smith Memorial Hall	S. M. H.
Stock Judging Pavilion	S. P.
Transportation Building	T. B.
University Hall	U. H.
University High School	U. H. S.
Vegetable Greenhouse	V. G.
Vivarium Building	V. B.
Woman's Building	W. B.
Wood Shops	W. S.

ACCOUNTANCY

(See Business Organization and Operation)

AGRICULTURAL EDUCATION

(See Education)

AGRICULTURE

(For Smith-Hughes Students)

AGRONOMY

Assistant Professors Wimer and Pieper

S9. Soil Physics and Management.—Origin of soil material and formation, and classification of soils; organic matter of soils; moisture, its movement and control;

drainage and dry land agriculture; irrigation; temperature; aeration; tillage; soil erosion; rotation. Lecture, MTTF, 8; 128 Agr. Laboratory, WS, 8, 9; 650 Agr. Quiz, TF, 9; 128 Agr. (3). Assistant Professor Wimer

Prerequisite: Chemistry 2a and Geology 44.

S25. Farm Crops.—Plant growth; structure; principles governing the production and harvesting of common farm crops; habits, characteristics, requirements, means of improvement; common diseases, insects, and their control; weed seed identification; methods of weed control; weed testing for purity and germination; market grades of grain; grain judging. Lecture and quiz, 128 Agr.; Laboratory, 600 Agr., MTWTS, 10, 11. (4). Assistant Professor Pieper

Prerequisite: Botany 5, or equivalent.

ANIMAL HUSBANDRY

Professor Card, Associate Professor Bull

S21. Principles of Feeding.—Classification, digestibility and functions of feed nutrients; classification and values of feeding stuffs; feed requirements and calculation of balanced rations for farm animals. Required for graduation in the College of Agriculture. Lecture and Laboratory, MTWTFS, 8; 553 Agr. (3).
Associate Professor Bull

Prerequisite: Animal Husbandry 5 and Chemistry 2, or their equivalents.

S37. Poultry Management.—A brief, general course dealing with the practical application of the principles of poultry husbandry to general farm conditions. A prerequisite to further courses in poultry. Lecture and quiz, 122 Agr.; Laboratory, S. P., MWF, 10, 11. (3). Professor Card

Prerequisite: Animal Husbandry 21.

DAIRY HUSBANDRY

Mr. Campbell

S24a. Elementary Dairy Production.—(No credit in this course allowed to juniors and seniors). General survey of the dairy industry; origin, history and characteristics of the breeds of dairy cattle; selection, feeding, and management of the dairy herd. Lecture, MW, 3; Quiz, F, 8; 122 Agr.; Laboratory, M, 8, 9; S. P. (2).
Mr. Campbell

S24b. Elementary Testing and Manufacture of Dairy Products.—(No credit in this course allowed to juniors and seniors). The testing and manufacture of dairy products; study of cream separators. Lecture, TT, 3; Quiz, F, 9; 122 Agr.; Laboratory, TT, 8, 9; 503 Agr. (2). Mr. Campbell

Prerequisite: Chemistry 1 or 1a.

FARM MECHANICS

Assistant Professor Shawl

S3. Gas Engines and Tractors.—Internal combustion engines and tractors; theory, ignition, operation and economy; practice in adjustments, troubles and testing. Lecture and quiz, 201 F. M.; laboratory, F. M., MTWTFS, 8, 9. (3).
Assistant Professor Shawl

HORTICULTURE

Assistant Professor Sayre

S1a. Elements of Horticulture.—Fruit growing, with special reference to the farm home. Recitations; practical exercises. No credit in this course allowed to juniors and seniors. Lecture, MTT, 10; laboratory, WF, 10, 11; 203 V. G. (2).
Assistant Professor Sayre

S1b. Elements of Horticulture.—Vegetable gardening, with special reference to the farm home. Recitations; practical exercises. No credit in this course allowed to juniors and seniors. Lecture, MWF, 8; laboratory, TT, 8, 9; 203 V. G. (2).
Assistant Professor Sayre

A CORNER OF THE WOMAN'S BUILDING

ART AND DESIGN

Assistant Professor LAKE

S1. Elementary Art.—Principles of construction and perspective in drawing. Free-hand drawing in line and tone from still-life, cast, and nature. MWF, 1, 2; 405 U. H. (2).

S9. Art for Common Schools.—The planning and execution of work in the common-school art study; design; blackboard drawing. Lectures on organization, equipment, and the administrative side of the supervisor's work. For supervisors of art, and public-school teachers. TT, 1, 2, 3; 403 U. H. (2).

S20. History of the Fine Arts.—Periods and styles of architecture, sculpture, and painting during the Italian Renaissance and to the present time. MWF, 3; 410 U. H. (2). Text: *Apollo* by S. Reinach (Charles Scribner's Sons, New York).

Equivalent: Art and design 20.

ASTRONOMY

Professor BAKER

Courses for Undergraduates

S1. Descriptive Astronomy.—An introduction to astronomy; the earth as an astronomical body; the solar system. Lectures and recitations, 11, MTWTF; 228 N. H.; laboratory, Tuesday evening; Obs. (3).

Prerequisite: Sophomore standing.

ATHLETIC COACHING

(See EDUCATION)

BACTERIOLOGY

Associate Professor TANNER, Mr. THOMPSON

S5a. Introductory Bacteriology and Sanitary Science.—Lectures, assigned readings, demonstrations, and recitations on bacteria, yeasts and molds; structure and morphology; systematic relationships; their significance in general sanitation, agriculture, home economics, communicable diseases, etc. (For those who wish an insight into matters of every-day importance such as sterilization, disinfection, food poisoning, etc.). Designed to accompany Bacteriology S5b but may be elected without it. MTWTF, 8; 229 N. H. (3). Associate Professor TANNER

Prerequisite: Sophomore standing; one semester of chemistry, or consent of the instructor.

S5b. Introductory Bacteriology, Laboratory.—Bacteriological technic; study of morphology and physiology of bacteria and certain related micro-organisms; preparation of media, and apparatus; staining, cultivation, etc. Designed to accompany Bact. S5a. MWF, 9, 10, 11; 367 Chem. (2). Mr. THOMPSON

Prerequisite: Bacteriology S5a or concurrent registration; Chem. 2a, 3 or 4.

Equivalent: Bact. S5a and S5b are equivalent to Bact. 5a and 5b.

Courses for Advanced Undergraduates and Graduates

S20. General Bacteriology.—Laboratory methods, technic of cultivation, and observation of micro-organisms; biochemical reactions; lectures, laboratory, reports and assigned readings. Lecture, MTWTF, 8; 229 N. H. Laboratory, MWF, 9, 10, 11; 367 Chem. (5). Associate Professor TANNER and Mr. THOMPSON

Prerequisite: Two years of college chemistry and junior standing.

S7 and S107.—Research for advanced undergraduates (S7) and graduate students in bacteriology. Hours and credit to be arranged. Associate Professor TANNER

BOTANY

Professor Stevens, Mr. Stark, Mr. Hafenrichter

Courses for Undergraduates

S1. General Botany.—Structure, physiology, natural history and uses of plants. Intended as a foundation for advanced study in any branch of botany, as well as giving the general knowledge of plant life which every educated person should possess. Lecture, MWF, 9; 228 N. H. Quiz, TT, 9; 259 N. H. Laboratory: Section A, MTWTF, 10, 11; or Section B, MTWTF, 2, 3; 258 N. H. (5).
Mr. Stark, Mr. Hafenrichter

S4a. Taxonomy of Cormophytes.—Structure, identification and classification of higher plants, chiefly of flowering plants. Field and laboratory work, including formation of an herbarium. ThF, 10, 11; S, 8, 9, 10, 11; 350 N. H. (2).
Prerequisite: Botany 1 or 5, or equivalent. Mr. Stark

S7a. Plant Pathology.—Comparative study of parasitic fungi, including symptoms, diagnosis and treatment of plant disease. There will be three collecting trips. Lecture, MW, 8; 349 N. H. Laboratory, M, 9, 10; T, 8, 9, 10; W, 9, 10. (3).
Prerequisite: Botany 1 or 5, or equivalent. Professor Stevens

Courses for Advanced Undergraduates and Graduates

S28a or b. Taxonomy of Economic Fungi.—Advanced practice on selected groups of parasitic fungi. (2-5). Arrange. Professor Stevens
Prerequisite: Botany 7a; junior standing.

S30. Methods of Teaching.—Conferences, preparation of lesson plans, preparation of laboratory material and participation in laboratory instruction. Time to be arranged. (2). Professor Stevens, Mr. Stark, Mr. Hafenrichter
Prerequisite: 15 hours of botany; senior standing; permission of instructor. This cannot be taken for graduate credit.

Courses for Graduates

S104. Mycology.—Research. Arrange. (½-2 units). Professor Stevens

S106. Plant Pathology.—Research. Arrange. (½-2 units). Professor Stevens

BUSINESS LAW

(See Business Organization and Operation)

BUSINESS ORGANIZATION AND OPERATION

Including Accountancy and Business Law

(See also Economics and Transportation)

Associate Professors Filbey and Russell, Mr. Anderson, Mr. Winter, Mr. Gore

A. ACCOUNTANCY

Courses for Undergraduates

S2a-2b. Intermediate Accounting.—Fundamentals of cost accounting, theory of partnership and corporation accounts, depreciation, goodwill, reserves and sinking funds; special financial statements, reading balance sheets, illustrative problems. Texts: Rowe's *Cost Accounting;* Klein's *Elements of Accounting;* lectures and problems. MTWTFS, Section A, 8; 202 Com.; Section B, 9; 202 Com. (6).
Prerequisite: Accountancy 1a-1b; credit in Economics 1. Mr. Winter
Equivalent: Accountancy 2a-2b.

Courses for Advanced Undergraduates and Graduates

S3a. Advanced Accounting.—Text: Esquerré's *Applied Theory of Accounts.* MTWTFS, 10; 206 Com. (3). Associate Professor Filbey

Prerequisite: Accountancy 2a-2b; Economics 3; Average of "C" or better in Accountancy 1 and 2.

Equivalent: Accountancy 3a.

Courses for Graduates

S110. Accounting Reports.—Methods of presenting reports of audits; investigations and operations; interpretation of accounting data. Four class hours a week; time to be arranged. (1 unit). Associate Professor Filbey

S129. Thesis.—Two class hours a week; time to be arranged. (1 unit). Associate Professor Filbey

B. BUSINESS ORGANIZATION AND OPERATION

Courses for Undergraduates

S1. Business Organization and Operation.—Individual proprietorship, partnership, and corporation; functions and relations of various departments; problems of management. Text: Marshall's *Business Administration.* MTWTFS, 8; 307 Com. (3). Mr. Anderson

Prerequisite: One year of Accountancy, Economics 1 or 2.

Equivalent: Business Organization and Operation 1.

S2. Marketing Organization and Operation.—Methods and problems involved in marketing raw materials and manufactured products. Text: Clark's *Principles of Marketing.* MTWTFS, 9; 101 Com. (3). Associate Professor Russell

Prerequisite: Business Organization and Operation 1.

Equivalent: Business Organization and Operation 2.

Courses for Advanced Undergraduates and Graduates

S4. Industrial Organization and Management.—Problems of organization and of administrative policy; supervision and management of industries and of industrial units. MTWTFS, 9; 307 Com. (3). Mr. Anderson

Prerequisite: Business Organization and Operation 2. Senior Engineering students who have had Economics 1 or 2 may be admitted by permission of the instructor.

Equivalent: Business Organization and Operation 4.

S7. Salesmanship and Sales Management.—Policies and practice of modern sales organizations; selling problems of manufacturers, wholesalers and retailers, management of salesmen; the practice of individual salesmen. Text: Russell's *Management of the Sales Organization* and Russell's *Fundamentals of Selling.* MTWTFS, 8; 101 Com. (3). Associate Professor Russell

Prerequisite: Business Organization and Operation 2; senior standing.

Equivalent: Business Organization and Operation 7.

Courses for Graduates

S129. Thesis.—Time to be arranged. (1 unit). Associate Professor Russell

C. BUSINESS LAW

Courses for Undergraduates

S3. Elementary Business Law.—Contracts, negotiable instruments, insurance, real property, landlord and tenant. MTWTFS, 11; 101 Com. (3). Mr. Gore

Prerequisite: Economics 1 or 2, or permission of instructor.

Equivalent: Business Law 3.

CHEMISTRY

Professor Rose, Professor Hopkins (in charge), Associate Professor Beal, Assistant Professor Reedy, Assistant Professor Englis, Assistant Professor Marvel, Dr. Rosalie M. Parr, Dr. Phipps, Dr. Hurd, Dr. Neville, Dr. Souther, Dr. Carver, Miss Lougee

Note: All the courses in chemistry in the Summer Session are equivalent to the courses of the same numbers during the academic year.

Courses for Undergraduates

S1. Elementary Chemistry.—The non-metallic elements. Texts: Noyes' *Textbook of Chemistry;* Noyes and Hopkins' *Laboratory Exercises* (Henry Holt and Company). Lecture-quiz, MTWTFS, 11; 100 Chem. Laboratory, 305 Chem. Section 1, MTWTFS, 8, 9; Section 2, MTWTFS, 9, 10. (Seniors, 3; others, 5).

Professor Hopkins, Dr. Parr, Dr. Neville

S1a. Inorganic Chemistry.—For students who have had one year of high-school chemistry. Same books as Chemistry 1. Lecture-quiz, MTWTFS, 11; 100 Chemistry. Laboratory, TT, 8, 9; 305 Chem. (Seniors, 2; others, 3).

Professor Hopkins, Dr. Phipps

S1b. Inorganic Chemistry.—For engineering students. Same hours as Chemistry 1, but only 8 hours laboratory work are required. (Seniors, 3; others, 4).

Professor Hopkins, Dr. Parr, Dr. Neville

S2a. Inorganic Chemistry.—Chemistry and qualitative analysis of the more common metals and inorganic compounds. Texts: Noyes' *Textbook of Chemistry;* Noyes and Smith's *Qualitative Analysis* (Henry Holt and Company). Lectures, MTWT, 9; 100 Chem. Quiz, MTWT, 8; 103 Chem. Laboratory, MTWTFS, 10, 11; 305 Chem. (Seniors, 3; others, 5).

Assistant Professor Reedy, Dr. Phipps, Miss Lougee

Prerequisite: Chemistry 1 or 1a.

S3a. Inorganic Chemistry and Qualitative Analysis.—For students in chemistry and chemical engineering. Same as Chemistry S2a. (Seniors, 3; others, 5).

Assistant Professor Reedy, Dr. Phipps, Miss Lougee

S4. Inorganic Chemistry and Qualitative Analysis.—For students in engineering. Same as Chemistry S2a. (Seniors, 3; others, 4).

Assistant Professor Reedy, Dr. Phipps, Miss Lougee

S5a. Elementary Quantitative Analysis.—Gravimetric and volumetric methods; stoichiometrical relations, the fundamental laws of chemistry and their application to quantitative analysis. Text: Smith's *Elementary Quantitative Analysis.* Lecture or quiz, MTWT, 11; 111 Chem. Laboratory, MTWT, 8-11; F, 8-12; 260 Chem. (5).

Assistant Professor Englis and Assistants

Prerequisite: Chemistry 2a or 3a.

S5b. Quantitative Analysis.—(Continuation of Chemistry 5a). Analysis of silicates, metallic compounds, and alloys; advanced qualitative analysis. Lectures; recitations; laboratory. Treadwell-Hall's *Analytical Chemistry, Vols. I, II.* Lecture or quiz, MTWT, 11; 204 Chem. Laboratory, 8-11, (8-12, Fri.); 218 Chem. (5). (Will not be offered for fewer than five students.) Associate Professor Beal

Prerequisite: Chemistry 5a or 13a.

S8. Agricultural Analysis.—Gravimetric and volumetric analysis; their application to agriculture. Smith's *Elementary Quantitative Analysis.* (For students in agriculture.) Lecture or quiz, MTWT, 8; 111 Chem. Laboratory, MTWT, 9-11; F, 8-11; 260 Chem. (3). Assistant Professor Englis and Assistant

Prerequisite: Chemistry 2a or 3a.

Courses for Undergraduates or Graduates

By suitable selection of courses through four consecutive summers it will be possible for persons attending the Summer Session to meet the requirements for the master's degree. Students following this plan should take physical chemistry (S31 and S33) during 1924, if possible, because these courses are not offered every summer.

S14a. Elementary Organic Chemistry.—This course should be accompanied by laboratory work, S14c. MTWTFS, 8; 217 Chem. (3). Dr. Hurd

Prerequisite: Chemistry S2a or S3a or equivalent course.

S14c. Organic Chemistry. (Elementary Laboratory).—Typical laboratory methods; syntheses of some of the more important organic compounds. Four times a week, 9-12; 250 Chem. (2).

Prerequisite: Registration in Chemistry S14a or completion of a course equivalent to S14a.

S15. Physiological Chemistry.—Proteins, fats, and carbohydrates; tissues, digestion, intestinal putrefaction, and feces; the quantitative analysis of gastric contents, blood, milk, and urine. Clinical aspects of the subject are treated thoroughly for prospective students of medicine. Lectures; demonstrations; conferences; laboratory; assigned reading. MTWTF, 8-12; 450 Chem. (5). Professor Rose

Prerequisite: Chemistry 5a or 8; 9 and 9c, or 14a and 14c, or equivalent.

S17. Teachers' Course.—Methods of teaching chemistry, assigned readings, discussions, reports, practice teaching. Open only to those who expect to teach. MTWT, 8; 201 Chem. (3). Professor Hopkins

Prerequisite: 13 hours of chemistry and senior or graduate standing.

S21. Qualitative Organic Analysis.—Systematic methods for the identification of pure organic compounds and mixtures. 250 Chem. (3). Four laboratory periods to be arranged in mornings.

Prerequisite: Chemistry S14b and S14d or equivalent.

S25. (Formerly 5c) **Food Analysis.**—Quantitative organic analysis; examination of food and drug products; alcohols, carbohydrates, fats and oils, animal and vegetable foods, nitrogenous bodies, preservatives and colors. (This course will alternate in future years with Chem. 26, Pharmaceutical Chemistry.) Sherman's *Organic Analysis* and Sherman's *Food Products*. Lecture, MTWTF, 8; 204 Chem.; Laboratory, MTWTF, 9-12; 218 Chem. (5). Associate Professor Beal

S27. Qualitative Analysis of the Rarer Elements.—The compounds of the rarer elements, their reactions, separation and identification. Recitations, MW, 8; 303 Chem.; laboratory, arrange; 350 Chem. (3). Professor Hopkins, Dr. Parr

S31. Elementary Physical Chemistry.—The more important principles of physical chemistry. MTWTFS, 9; 161 Chem. (3). Dr. Carver

Prerequisite: Chemistry 1, 2a or 3a, 5a, 5b; physics 1a-b or 7a-b; mathematics 7 or 8.

S33. Elementary Physical Chemistry.—A laboratory course to accompany Chemistry S31. TW, 1-6; 124 Chem. (2). Dr. Carver

Prerequisite: Same as Chemistry S31.

S92. Chemical Literature and Reference Work.—Periods, leaders, journals; use of literature. Lectures, reports, reference work. Two periods a week, arrange. (1). Miss Sparks

Courses for Graduates

S103. Advanced Inorganic Chemistry.—(Second Semester). The rarer elements of the periodic system. Recitations, MTWT, 9; 303 Chem. (½ unit).

Prerequisite: Graduate standing. Professor Hopkins

S103a. Advanced Analytical Chemistry.—Four to five times per week. (½ unit, 1¼ with laboratory). Associate Professor Beal

S103d. Laboratory Work in the Rarer Elements.—(Second Semester). (¼ to ¾ unit). Laboratory work to accompany or follow Chem. S103. Arrange. Professor Hopkins

S104e. Advanced Organic Chemistry.—Chiefly laboratory work. The study and development of methods which are suitable for large scale production. (Limited to ten students in 1924). (1 unit). Assistant Professor Marvel

S105a. Advanced Physiological Chemistry.—The more difficult biochemical preparations; the use of analytical methods. Chiefly laboratory work. One to five times a week. (½-1 unit). Professor Rose

S11 and S111. Research.—Advanced work for undergraduates (S11) and research work for graduates (S111), in inorganic, organic, analytical, physical, or physiological chemistry. Arrange hours and credit before registration.

Inorganic Chemistry. Professor Hopkins, Assistant Professor Reedy
Analytical Chemistry. Associate Professor Beal, Assistant Professor Englis
Physiological Chemistry. Professor Rose
Organic Chemistry. Assistant Professor Marvel, Dr. Hurd
Physical Chemistry. Assistant Professor Reedy, Dr. Carver

THE CLASSICS

LATIN

Professor Canter

S1. Caesar.—Intended primarily to meet the needs of present or prospective teachers of Latin. Selections will be read from the Gallic and Civil wars, with a review of special studies and criticisms of Caesar's works which have appeared in recent years. Caesar's entire military and political activity will be traced. MTW, 4; 120 L. H. (1½).

Prerequisite: Two years or more of high-school Latin.

S13. Roman Private Life.—The name, the family, the house, the organization of society, marriage, dress, education, amusements, supplemented by the slides and photographs of the department and the collections of the classical museum. TT, 3; 120 L. H. (1).

S9. Teachers' Course.—Special attention to problems and methods of instruction in Latin in the secondary school; considerable time will be devoted to the work of the first, second, third, and fourth years; the position of Latin in the curriculum of the high school; the purposes and results of Latin instruction. MWF, 3; 120 L. H. (1½).

Prerequisite: Two years or more of high-school Latin.

Courses for Graduates

S102. Roman Oratory.—Lectures and readings on the rise and development of oratory as an art and as a department of literature. TT, 4; 120 L. H. (½-1 unit). A full unit is possible only for those having an otherwise limited schedule.

Prerequisite: Graduate standing.

DRAWING, GENERAL ENGINEERING

Mr. Crossman

S1. Elements of Drafting.—Engineering lettering; orthographic projection; isometric oblique and perspective drawing; machine sketching; working drawings. Lettering; engineering styles and the making of name plates and titles. Mechanical drawing; drawings from specifications and models with tracings. Dimensioned sketches from parts of standard machines; complete working drawings. Blue-print and VanDykes from tracings. Time sketches of equipment. Text: Jordan & Hoelscher's *Engineering Drawing*. MTWTFS, 8, 9, 10; 105 T. B. (4).

S2. Descriptive Geometry.—Theory of orthographic projection; the point, line, and plane; the properties of surfaces; tangents; intersections, and developments. Practical problems, recitations and drawing room work. Text: Miller's *Descriptive Geometry*. MTWTFS, 7, 8, 9; 105 T. B. (4).

Prerequisite: Plane and solid geometry.

ECONOMICS

(See also Business Organization and Operation, and Transportation)
Professor Robinson, Dr. Berman, Mr. Nickoley

Courses for Undergraduates

S2. Principles of Economics.—Text: Ely's *Outline of Economics*, MTWTFS, Section A, 8; 111 Com. Section B, 9; 111 Com. (3). Dr. Berman, Mr. Nickoley

Prerequisite: One year of university work or (for teachers) the permission of the instructor.

Equivalent: Economics 2.

S3. Money and Banking.—Money; monetary system of the United States; money and prices; credit and banking; domestic and foreign exchange; banking system of the United States compared with other systems. Texts. Johnson's *Money and Currency* and Dunbar's *Theory and History of Banking*. MTWTF, 10; 101 Com. (2½). Mr. Nickoley

Prerequisite: Economics 1 or 2, or their equivalent.

Equivalent: Economics 3 when used as a prerequisite.

Courses for Advanced Undergraduates and Graduates

S10. Corporation Management and Finance.—Text: Lincoln's *Business Finance*. MTWTF, 10; 204 Com. (2½). Professor Robinson

Prerequisite: Economics 1 or 2, and junior standing, or the permission of the instructor.

Equivalent: Economics 10 when used as a prerequisite.

S36. Savings and Investments.—Texts: Jordan's *Investments* and Gaines' *The Art of Investment*. MTWT, 11; 204 Com. (2). Professor Robinson

Prerequisite: Economics 1 or 2, junior standing, or the permission of the instructor.

Equivalent: Economics 36, but not accepted as a substitute for Economics 36 in satisfying the requirements for the curriculum in Banking and Finance.

S41. Introduction to Labor Problems.—Text: Watkins' *Introduction to the Study of Labor Problems*. MTWTF, 8; 204 Com. (2½). Dr. Berman

Prerequisite: Economics 1 or 2, junior standing, or the permission of the instructor.

Equivalent: Economics 41 when used as a prerequisite.

Courses for Graduates

S118. Seminar.—For graduate students who are writing theses, or are engaged in research work. Time to be arranged. (1-2½ units). Professor Robinson

Prerequisite: Graduate standing.

EDUCATION

Dean Chadsey, Professor Hollister, Professor Cameron, Professor Paul, Professor Monroe, Professor Horn, Director Huff, Professor Zuppke, Associate Professor Nolan, Associate Professor Lundgren, Assistant Professor Belting, Assistant Professor Phillips, Assistant Professor Stafford, Assistant Professor Staley, Mr. Williams, Dr. Odell, Dr. Krusé, Miss Streitz, Mr. Troth, Mr. Trimble, Mr. Knudsen, Mr. Braucher, Mr. Lawson, Mr. Dolch, Mr. Higginson, Mr. Dobie, Mr. Gill, Mr. Ruby, Mr. Bearg, Mr. Ingwersen, Mr. Wagner, Mr. Bullock, Mr. Brown, Mr. Hindman

A. GENERAL EDUCATION

Introductory Courses

S6. Principles of Secondary Education.—The organization and administration of the high school; its purposes and functions in society; a consideration of special problems centering around secondary education.

Subject	No.	Credits	Section	Hours	Days	Room	Instructor
Ed.	S6	3	Lect.	9	TT	218 U. H.	Hollister
			Disc. A	9	MWFS	218 U. H.	Hollister
			Disc. B	10	TWTF	218 U. H.	Hollister

Prerequisite: Junior standing, or consent of instructor.

S10. Technic of Teaching.—Discipline and classroom management; characteristics of pupils, types of learning; types of instruction; supervised study; function and structure of subject-matter; measuring the results of the teaching process.

Subject	No.	Credits	Section	Hours	Days	Room	Instructor
Ed.	S10	3	A	8	MTWTFS	202 U. H.	Trimble
			B	8		207 U. H.	Troth
			C	9		102 U. H.	Streitz
			D	10		202 U. H.	Dolch
			E	10		315 U. H.	Knudsen
			F	11		102 U. H.	Williams

Equivalent: Education 10.
Prerequisite: Junior standing, or consent of instructor.

S10c. Technic of Elementary Instruction.—A survey of the field of general methods in elementary school instruction; a presentation of these methods in such a way as to make them applicable to individual problems of the teacher; methods and devices actually used in progressive elementary schools analyzed and explained. This course is designed to meet individual needs as well as to prepare the student for elementary-school positions. MWFS, 10; 126 U. H. (2). Miss Streitz
Prerequisite: Junior standing, or consent of instructor.

S25. Educational Psychology.—(Introductory course). Instinct; habit, and the acquisition of skill; perception and memory; conception, judgment, and reasoning; applications to school subjects; lectures, readings, demonstrations.

Subject	No.	Credits	Section	Hours	Days	Room	Instructor
Ed.	S25	3	Lect.	8	TT	218 U. H.	Kruse
			Disc. A	8	MWFS	417 U. H.	Kruse
			Disc. B	9	MTWT	417 U. H.	Odell
			Disc. C	10	TWTF	207 U. H.	Troth
			Disc. D	11	MTWT	207 U. H.	Higginson
			Disc. E	2	TWTF	207 U. H.	Dolch

Prerequisite: Junior standing, or consent of instructor.

Courses for Advanced Undergraduates and Graduates

S4. Special Problems in Educational Administration.—A consideration from the standpoint of the superintendent of problems relating to the administration of city school systems. MTW, 8; 315 U. H. (1½). Dean Chadsey
Prerequisite: Senior standing, or experience as a principal or superintendent.
Equivalent: Education 4 (in part).

S8. Philosophy of Education.—An examination and constructive criticism of the philosophical principles underlying the current aims, methods and organization of Education. MTWT, 9; 211 U. H. (2). Dr. Kruse

S9. School Building and Sanitation.—Legal aspects of school building; principles involved in locating a site; detailed procedure in planning a building; problems peculiar to high-school construction; types of structures as related to local conditions. MTWT, 1; 207 U. H. (2). Mr. Knudsen

S12. The Principal and His School.—The principal's conception of public education, his relation to his community, to the superintendent, to his teachers, to his pupils' progress and promotion, to curriculum-making, to general financing and organizing, to school attendance, to social organization and to extra-curricular activities. TWTF, 11; 202 U. H. (2). Mr. Trimble

S14. Problems in Elementary Education.—A survey of current practice and problems in the organization and administration of the public elementary school, exclusive of classroom procedure. Intended for present and prospective superintendents, principals, and experienced teachers who are looking towards administration. In addition to reading and discussion, there will be required of each student the detailed study of one problem, and a contribution towards its solution. MTWTF, 2; 211 L. H. (2½). Professor Horn

S17. The Teacher.—Preparation, selection, placement agencies, requirements for certification, salary, pensions, methods of promotion in service, professional ethics. Lectures, readings, and discussions. MTWT, 1; 212 U. H. (2). Mr. Williams

S20a. Supervision of Secondary Education.—Training teachers in service; qualities of merit and causes of failure in teachers; selection of teachers; organization of teachers' meetings and other agencies for improving the teaching service. MWF, 3; 211 U. H. (1½). Assistant Professor Belting

S22. High School Educational Measurement.—The administration and interpretation of educational tests with especial reference to high-school problems. TWTF, 9; 126 U. H. (2). Professor Monroe

S23. Educational Statistics.—The practical application of statistical methods to educational investigation. Methods of gathering data, calculations of statistical measures and interpretations. MTWTFS, 10; 106 U. H. (3). Dr. Odell

S28. The Community and Its High School.—The growth and development of the community: Political, economic and social changes; the high school as an exponent of these changes; the community institutional relationship to the high school; the function of principal and teachers in the community; social complexion of the pupils. MWF, 1; 306 L. H. (1½). Assistant Professor Belting

S41. Survey of Vocational Education.—A study of the problems of vocational education. The relation of vocational education to general education and to modern economic problems. MTWTF, 1; 106 U. H. (2½). Assistant Professor Phillips

S45. Advanced Educational Psychology.—MTWT, 10; 417 U. H. (2).
Prerequisite: Education 25. Professor Cameron

S46. The Education of Exceptional Children.—This course, intended for school administrators, supervisors of special education, and teachers of various types of exceptional children, will present the present status of special education in the United States; the formulation of a statement of policy regarding exceptional children in the public schools; the formulation of a general theory for their education; and special consideration of the various problems involved. MTWTF, 3; 211 L. H. (2½). Professor Horn

S55. Problems of Vocational Guidance.—Place of guidance and placement in public education. Limitations and possibilities of vocational guidance. Organization and administration of guidance and placement work. MTWTF, 2; 118 U. H. (2½). Assistant Professor Phillips

S90. Rural Education.—A study of rural life conditions, needs, standards and agencies for improvement. The place of agriculture, the rural school, the church, and farm organizations in programs of rural community development, MWF, 11; 553 Agr. (2). Associate Professor Nolan

Courses for Graduates

S101. Educational Theory.—TT, 11; 417 U. H. (½ unit). Professor Cameron

S104. Educational Administration.—M, 4, 5; 202 L. H. (½ unit). Dean Chadsey

S106. Problems of High School Administration.—F, 4, 5; 202 L. H. (½ unit) Assistant Professor Belting

S119. Curriculum Construction.—WF, 8; 211 U. H. (½ unit). Professor Monroe

S124a. Educational Research.—Emphasis will be placed upon the technic of research, including collection of data and their analysis, summary and interpretation. T, 4, 5; 106 U. H. (½ unit). Professor Monroe

S124b. Educational Research.—In this seminar special attention will be given to the method and form of reporting the results of educational research. It should be taken by all students who are anticipating the writing of a thesis. TT, 8; 211 U. H. (½ unit). Professor Monroe

S125. Educational Psychology.—Th, 4, 5; 417 U. H. (½ unit). Professor Cameron

S127. The High School Curriculums.—W, 4, 5; 306 U. H. (½ unit). Assistant Professor Belting

S141. Problems in the Teaching of English in the Secondary School.—F, 1, 2; 202 L. H. (½ unit). Professor Paul

S147. Psychology of the Elementary School Subjects.—MW, 11; 417 U. H. (½ unit). Professor Cameron

B. AGRICULTURAL EDUCATION

All courses in agricultural education are designed for teacher-training in vocational agriculture, meeting the provisions of the Smith-Hughes Act for Vocational Education.

S50d. Supervised Farm Practice.—A portion of the practice teaching course, Agr. Educ. 50, dealing with the supervision of home projects in vocational agriculture. Students enrolled in this course will be given practice in supervising the projects of the agricultural students of the Champaign and Urbana high schools. Conference, TT, 2; 122 Agr. One trip each week for each student. (2). Associate Professor Nolan, Mr. Lawson

S51. Teachers' Course in Agriculture.—Principles and methods of teaching vocational agriculture. MTWTF, 11; 553 Agr. (3). Associate Professor Nolan
Prerequisite: Educ. 10, 25, and senior standing. Required of vocational teachers.

Courses for Advanced Undergraduates and Graduates

S90. Rural Education.—Conditions, standards, and agencies in rural life and education. MWF, 10; 445 Agr. (2). (Same as Educ. S90). Associate Professor Nolan

S91. Agricultural Education.—Special problems in rural and agricultural education. Time to be arranged. (3-5). Associate Professor Nolan
Prerequisite: Agr. Educ. 50, 51.

C. ATHLETIC COACHING AND PHYSICAL EDUCATION FOR MEN

(See also Psychology S25)

S9a. Football Theory.—This course will include the theories of fundamentals, their development, and relation to team-work. Eastern systems of offense and defense with their generalship and strategy will be discussed. Special emphasis will be given to the forward-pass attack and its defense. TTS, 8, 9. (2). Mr. Dobie

S10a. Baseball Theory.—Lectures on the theory of batting; base-running; proper methods of fielding each position; team-work and coaching methods; study of the rules; and a general study of fundamentals. MWF, 11. (1). Director Huff

S10b. Baseball Practice.—The principles discussed in S10a will be practiced in the various sections. Each section will meet three times a week. Sec. A, MWF, 1; Sec. B, TTS, 1; Sec. C, MWF, 2. (⅓). Associate Professor Lundgren

S10c. Baseball Discussion.—Further theoretical study of the fundamentals of baseball, supplemental to S10a; baseball lecture course; discussions and recitations. TTS, 11. (1). Director Huff

S11a. Track and Field Theory.—The theory of starting, sprinting, distance-running, hurdling, high and broad jumping, pole-vaulting, shot-putting, hammer, discus and javelin-throwing. Practical talks on the methods of preparing contestants for different athletic events; rules of competition; study of physical condition, including endurance, speed and fatigue. Work is assigned for the promotion, management and officiating of games and meets. TTS, 10. (1). Mr. Gill

S11b. Track and Field Demonstration and Discussion.—The principles in S11a will be demonstrated and discussed in the various sections. Sec. A, MWF, 1; Sec. B, TTS, 1. (⅓). Mr. Gill

S12a. Basketball Theory.—Instruction will be given in basketball with the idea of fitting men to coach. The course will cover passing, goal-throwing, dribbling, team-play, conditioning a team, and the different styles of play used by the leading coaches. MWF, 10. (1). Mr. Ruby

S12b. Basketball Practice.—The principles discussed in S12a will be practiced in the various sections. Sec. A, TTS, 10; Sec. B, MWF, 11; Sec. C, TTS, 11; Sec. D, MWF, 2; Sec. E, TTS, 2. (⅓). Mr. Ruby, Mr. Bearg, Mr. Ingwersen

S13a. Football Theory.—The theoretical work will take up the rules from the standpoint of coaching, players, and officials; the several styles of offense and defense with consideration of their special strengths and weaknesses; generalship and strategy; training; conditioning, and player's equipment. MWF, 8, 9. (2). Professor Zuppke

S13b. Football Practice.—The practical work will include punting, drop-kicking, place-kicking, kick-off, and forward-passing; tackling dummy and charging sled; special drills for linemen, ends and backs; following the ball, interference, and team-work; fundamental plays, freak plays, and signal systems. Sec. A, TTS, 11; Sec. B, TTS, 2; Sec. C, MWF, 3; Sec. D, MWF, 4. (⅓). Mr. Bearg, Mr. Ingwersen

S14a. Training.—Theories of training, massage, treatment of sprains, bruises, etc.; bandaging and first aid. This course should be taken by all those who take S10, S11, S12, or S13. T, 4. (⅓). Mr. Bullock

S14b. Training Practice.—The various sections will practice bandaging, massage, and the treatment of injuries which are discussed in S14a. Sec. A, T, 3; Sec. B, Th, 3; Sec. C, Th, 4; Sec. D, T, 5. (no credit). Mr. Bullock

S15. Calisthenics (Free Exercises).—Systems, value, method, and progression. Typical lessons for corrective and responsive work. The use of wands, clubs, and dumb-bells. Emphasis to be laid on progression and the method of presenting the material. The simplest and most explanatory terminology. Theoretical and practical work. Sec. A, MWF, 8; Sec. B, TTS, 8; Sec. C, MWF, 3. (½). Assistant Professor Staley, Mr. Hindman

S16. Mass Physical Activities.—Practical participation in and direction of mass games, mass athletics, and combative contests—a coming feature in the American physical-training program; also theoretical discussion. T, 3; Th, 3, 4. (½). Assistant Professor Staley

S17. Gymnastic Stunts.—Theory and practice of gymnastic stunts which may be used in high-school and college gymnasium classes. Course includes work on the tumbling mats, horizontal bars, rings, parallel bars, etc. Sec. A, TTS, 2; Sec. B, MWF, 4. (½). Mr. Wagner

S18. Medical Gymnastics.—Physical education in its broadest sense, the handling of the physically subnormal. Flat feet and other foot disabilities, body mechanics, constipation, hernia, joint dislocations, the after-treatment for broken bones and fractions, etc. The prevention of deformities, or the cure or correction of physical disabilities. MTWTFS, 2. (2). Assistant Professor Stafford

S19. Organization and Administration.—Includes lectures on the purposes and methods of physical education; organization of an athletic department; its administration and problems. TTS, 11. (1). Mr. Bearg

S20. Physical Diagnosis.—Physical examinations, anthropometry and efficiency tests to enable the coach to determine the pupil's capacity for, or needs in, physical education. Prescription of physical education to fit the individual's special needs. MWF, 1. (1). Assistant Professor Stafford

S21. Gymnastic Dancing.—Theory and practice. System, progression, and method of presenting gymnastic dance steps for class or individual instruction. Theory, personal proficiency, and practice teaching. Sec. A, MWF, 3; Sec. B, MWF, 5. (½). Mr. Wagner

S22. History, Systems, and Theories of Physical Education.—Lectures on Swedish, German, and French theories of Physical Training, and athletic sport in Greece, Italy, France, Germany, Sweden, and England. MWF, 2. (1). Assistant Professor Staley

S23. School Program of Physical Education.—Lectures on the sociological need for physical education; the educational, health, and recreational significance. Discussion of what the program should include. Present tendencies in the physical education movement. TTS, 1. (1). Assistant Professor Staley

S24. Swimming.—Theory and practice. Includes confidence methods, breast stroke, side stroke, crawl stroke, diving, water basketball, water polo and life-saving. Sec. A, TTS, 3; Sec. B, MWF, 4; Sec. C, MWF, 5. (½). Mr. Brown

S27. Community Recreation.—Lectures on the theory of play. Organization and conduct of playgrounds, community centers, community athletics, school playgrounds, social programs, community music, drama, health, and recreation. MWF, 1. (1). Mr. Hindman

S28. Miscellaneous Games.—The rules and fundamentals of soccer, volleyball, playground ball, water basketball, cage ball, pin ball, punch ball, kick ball, German bat ball, and other games which occupy a large place in our physical education program. MWF, 11. (½) Mr. Hindman

D. INDUSTRIAL EDUCATION

S1. First Course.—Practice and methods in woodwork. MTWTF, 1-3; U. H. S. (2½). Mr. Braucher

S2a. Advanced Course in Shopwork.—House construction problems. Practice and methods. MTWTF, 8-10; U. H. S. (2½). Mr. Braucher

S62. History and Organization of Manual Arts.—A survey of the development of Manual Arts in America, and problems of administration of shop and drawing work. MTWTF, 10; 211 U. H. (2½). Mr. Braucher

S3. Mechanical Drawing.—Same as General Engineering Drawing S1.

Courses for Advanced Undergraduates and Graduates

S41. A Survey of Vocational Education.—MTWTF, 1; 106 U. H. (2½). Same as Education S41). Assistant Professor Phillips

S55. Problems of Vocational Guidance.—MTWTF, 2; 118 U. H. (2½). (Same as Education S55). Assistant Professor Phillips

ENGLISH

Professor Dodge, Professor Paul, Associate Professor Jones, Assistant Professor Hillebrand, Assistant Professor Bundy, Dr. Weirick, Mr. Diffenbaugh, Mr. Gray, Mr. Davis, Miss Sergeant, Mr. Glenn

A. LANGUAGE AND LITERATURE

Courses for Undergraduates

S1a.[1] Survey of English Literature.—Chaucer and his contemporaries, the popular ballads, Malory, the Renaissance, the Reformation, Elizabethan prose, Spenser, the Elizabethan Lyric, Shakespeare, Bacon, Cavalier lyrics, religious lyrics, Milton. Text: *Century Readings in English Literature (Part I)*. MTTF, 9; 307 U. H. (2). Professor Dodge

Prerequisite: One year of college work or the equivalent.

Equivalent: First half of English 1. (Together with S1b this course covers the work of English 1. To be credited as equivalent to English 1, S1b and S1a should be taken simultaneously).

S1b.[1] Survey of English Literature.—Bunyan and the prose of the Puritans, the Restoration, Dryden, Swift, the periodical essayists, Pope and the pseudo-classical school, DeFoe and the novelists, Thomson, Gray, Samuel Johnson, Goldsmith, Cowper, Burns. Text: *Century Readings in English Literature (Part I)*. MTTF, 11; 307 U. H. (2). Assistant Professor Bundy

Prerequisite: One year of college work or the equivalent.

Equivalent: Second half of English 1. (To be credited as equivalent to English 1, S1b and S1a should be taken simultaneously).

S12. American Literature.—Bryant, Irving, Cooper, Hawthorne, Emerson, Poe, Longfellow, Whittier, Lowell. Lectures, discussions, readings and reports. Text: Page's *Chief American Poets*. TWTF, 10; 202 L. H. (2). Professor Paul

Prerequisite: One year of college work or the equivalent.

Equivalent: English 12.

S23. Introduction to Shakespeare.—Two Gentlemen of Verona, A Midsummer Night's Dream, Richard III, Romeo and Juliet, Twelfth Night, Othello, King Lear, The Tempest. Text: Hudson *Shakespeare*. MTWTF, 8; 202 L. H. (2½). Assistant Professor Hillebrand

Prerequisite: English 1-2, or 10-11, or 20 with grade of B, or junior standing.

Equivalent: English 23 (in part).

S42. The Teaching of English Composition in the Secondary School.—MTWT, 2; 202 L. H. (2). Professor Paul

S44. Contemporary Poetry.—MTWTF, 10; 410 U. H. (2½). Dr. Weirick

Prerequisite: Ten hours of English literature or junior standing.

Equivalent: English 44 (in part).

Courses for Advanced Undergraduates and Graduates

S8. Old English. (Anglo-Saxon).—Grammar, with specimens of prose and the shorter poems. Text: Bright's *Anglo-Saxon Reader*. MTWTFS, 10; 110 L. H. (3). Professor Dodge

Prerequisite: Ten hours of English literature or two years of college work.

Equivalent: English 8.

S25. Chaucer.—Chaucer's poetry is studied with particular attention to mediaeval ideals and to English society in the fourteenth century. Text: Skeat's *Student's Chaucer*. MTWTF, 9; 218 L. H. (2½). Associate Professor Jones

Prerequisite: Junior standing and ten hours of English literature or the consent of the instructor.

Equivalent: English 25 (in part).

S45. Contemporary European Drama.—The "theatre of ideas." Teutonic naturalism, and the peasant drama of England and Ireland. Modern stagecraft. Ibsen, Strindberg, Hauptman, Schnitzler, Hofmannstahl, Zola, Becque, Brieux, Hervieu, Maeterlinck, Shaw, Galsworthy, Masefield, Barker, Synge, Fitch, Moody, and others. MTWTF, 9; 110 L. H. (2½). Assistant Professor Hillebrand

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[1] S1a with S1b may be counted for credit without S2a and S2b.

(Attention of those who register in this course is called to Public Speaking S10.)
Prerequisite: Ten hours of English literature or two years of college work.
Equivalent: English 45 (in part).

Courses for Graduates

S101. Research in Special Periods.—Individual conferences arranged with graduate students engaged upon definite pieces of investigation. (1 unit).

S120. History of Literary Criticism.—MTWT, 9; 220 L. H. (1 unit).
Assistant Professor Bundy

S128. English Literature in the Sixteenth Century.—MTWT, 10; 218 L. H. (1 unit). Associate Professor Jones

B. RHETORIC

Courses for Undergraduates

S1. Rhetoric and Themes.—Principles of structure; grammar; punctuation; the sentence; reasoning processes. Four short themes a week and an occasional long theme. Oral and written exercises. Texts: Woolley's *Hand-book of Composition*, and Thomas, Manchester, and Scott's *Composition for College Students*. MTWTFS, three sections: A at 9; B at 10; C at 11; 302 U. H. (3).
Mr. Nelson, Mr. Glenn, Mr. Diffenbaugh
Prerequisite: Entrance credit in English.
Equivalent: Rhetoric 1.

S2. Rhetoric and Themes.—Principles of argumentation, narration and description. Text: Woolley's *Hand-book of Composition* and Thomas, Manchester, and Scott's *Composition for College Students*. MTWTFS, two sections: A at 9; B at 10; 308 U. H. (3). Mr. Nelson, Mr. Diffenbaugh
Prerequisite: Rhetoric 1.
Equivalent: Rhetoric 2.

S3. Exposition.—Themes or topics of general interest: Analysis of facts and ideas, literary reviews, and criticisms; informal essays. Intended for those who write correctly yet desire further practice in composition. MTWTFS, 8; 110 L. H. (3).
Prerequisite: Rhetoric 1-2. Dr. Weirick
Equivalent: Rhetoric 3.

S10. Business Writing.—Correspondence; sales letters; practice in writing business reports and summaries. Lectures and discussions. (Not counted toward a major in English). A, MTTS, 9; 106 U. H.; B, MTTF, 2; 106 U. H. (2).
Prerequisite: Rhetoric 1-2. Mr. Davis, Mr. Glenn
Equivalent: Rhetoric 10.

C. PUBLIC SPEAKING

S1. Oral Expression.—The fundamental principles of speaking and reading. Assigned readings, written exercises, speaking from the platform. MTWT, two sections: A at 9; B at 1; 318 U. H. (2). Mr. Gray, Miss Sergeant
Prerequisite: Rhetoric 1 and 2 or equivalent.
Equivalent: Public Speaking 1.

(Credit is not given for this course unless it is followed by Public Speaking 2 or 10, or their equivalent).

S8. Dramatization.—Dramatic dialogue; stage action; reading; problems. MTWT, 11; 318 U. H. (2). Mr. Gray, Miss Sergeant
Prerequisite: Public Speaking 10 or equivalent, and junior standing.
Equivalent: Public Speaking 8.

S10. Interpretation.—Oral interpretation of various types of literature; extracting the values from the printed page. MTWT, 2; 302 U. H. (2). Miss Sergeant
Prerequisite: Public Speaking 1 or equivalent.
Equivalent: Public Speaking 10.

S12. The Teaching of Speech.—Problems in oral English; the foundation of training in speaking and reading. Assigned readings, reports. MTWT, 10; 318 U. H. (2). Mr. Gray

Prerequisite: Junior standing and the consent of the instructor.
Equivalent: Public Speaking 12.

D. JOURNALISM

S1. The Collecting and Writing of News.—Text: Spencer's *News Writing*. MTWTFS, 9; 107 U. H. (3). Mr. Davis

Prerequisite: Rhetoric 1-2.
Equivalent: Journalism 1.

ENTOMOLOGY

Assistant Professor Balduf, Dr. Glasgow

The attention of both undergraduate and graduate students is directed to the very considerable advantage of pursuing work in Entomology during the Summer Session. The abundance of living insects at this time affords ready material for collection, for study and for research, and makes possible the actual illustration of important biological principles, the demonstration of habits, life-histories and methods of injury, and the practical application of control measures.

The Natural History Library, comprising about 25,000 volumes, and especially rich in entomological literature, both American and foreign, will be open every day during the Summer Session.

Courses for Undergraduates

S1. Introductory Entomology.—An introduction to the habits, life-histories, structure, physiology and classification of insects, followed by a comprehensive survey of their importance to all forms of human activity. The recognition and control of the more important pests of field, garden, orchard, greenhouse and ornamental plantings, stored products, the household, domestic animals, and man. Permanent collections of important insects are prepared.

Certain laboratory periods may be used for field trips at the student's expense. Text: Sanderson & Peairs' *Insect Pests of Farm, Garden and Orchard*. MTWTF, 1, 2; 408 N. H. (3). Dr. Glasgow

S2. General Entomology.—A comprehensive study of insects as a class and to illustrate important biological theories. Morphology, development, behavior, habitats, adaptations and interrelations of insects. Characters of the orders and of the more important families and species, with practice in the determination of specimens and in the preparation of a systematic collection.

Designed to give an appreciation of the phenomena of life as illustrated by insects, an enlarged viewpoint, and a basis for advanced courses or special study in entomology. TTS, 9, 10, 11; 217 N. H. (3). Assistant Professor Balduf

Prerequisite: Entomology 1, or equivalent.

Courses for Advanced Undergraduates and Graduates

S6. Special Problems.—Instruction to meet the needs of individual students with emphasis on classification, morphology, biology, or some special economic group such as insect pests of fruits, vegetables, field crops, man, or domestic animals. Time to be arranged; 217 N. H. (2-3). Assistant Professor Balduf, Dr. Glasgow

Prerequisite: Entomology 1 and 2.

Courses for Graduates

S108. Research in Entomology.—Accepted for credit toward a master's or doctor's degree. (1-2 units). Assistant Professor Balduf

GEOLOGY

(Including Mineralogy, Paleontology and Geography)

A. GENERAL GEOLOGY

(No Courses Offered)

B. GEOGRAPHY

Miss Ashton, Mr. Johnson

S3b. Industrial and Commercial Geography.—The geographic conditions affecting the industries, production, and commerce of the world exclusive of North America; the development of great commercial areas, and their relations to the location and availability of great resources; markets and transportation routes. Discussions, laboratory. This course corresponds to the second half of the work of Geography 3 which does not depend upon the first half. MTWTF, 9; 247 N. H. Lab. W, 2-4; 251 N. H. (2½). Mr. Johnson

Prerequisite: Geography 1, its equivalent, or on consultation.

S8. Geography of Europe.—Influence of climate, surface features, and natural resources upon the distribution of people, their industries, and routes of trade. New boundaries and economic problems in their geographic setting. MTWTF, 10; 247 N. H. (2½). Miss Ashton

Prerequisite: Geography 1, its equivalent, or on consultation.

S12. Geographic Factors in the History of the United States.—Geographic conditions affecting the history of the United States as manifested in the spread of settlement and political control, and in economic and social development. MTWTF, 8; 247 N. H. (2½). Miss Ashton

Prerequisite: Consent of the instructor.

S14. Weather and Climate.—Elementary study of the atmosphere, weather conditions, forecasting, with practice in reading instruments and graphing data. Practical aspect of subject emphasized, with particular reference to the influence of weather and climate on man and his industries, especially agriculture. MTWTF, 11; 247 N. H. (2½). Mr. Johnson

GERMAN

Assistant Professor Koller, Dr. Uhlendorf, Dr. Geissendoerfer

S1. Beginners' Course.—MTWT, 3, 4; 312 U. H. (4). Dr. Geissendoerfer

Equivalent: German 1, or one year of high-school German.

S3. Reading and Grammar.—(Continuation of Beginners' Course). MTWT, 3, 4; 205 L. H. (4). Dr. Uhlendorf

Prerequisite: German 1, or S1, or one year of high-school German.

Equivalent: German 3, or two years of high-school German.

S4. Prose Reading.—Narrative Prose, sight reading, writing. MTWT, 3, 4; 215 L. H. (4). Assistant Professor Koller

Prerequisite: German 3 (or 2) or two years of high-school German, or equivalent.

Equivalent: German 4.

S5. Modern Prose.—Reading of more advanced character. MTWT, 11; 312 U. H. (2). Dr. Geissendoerfer

Prerequisite: German 4, or three years of high-school German, or equivalent.

Equivalent: German 5 (in part).

S17. Conversation and Composition.—Intermediate Course. MTWT, 2; 205 L. H. (2). Dr. Uhlendorf

Prerequisite: The permission of the instructor.

Equivalent: German 17 (in part).

AGRICULTURAL BUILDING

Courses for Advanced Undergraduates and Graduates

S27. Lessing.—A study of his life and principal works. MWF, 11; 215 L. H. (1½ or 2). Assistant Professor Koller

Prerequisite: The permission of the instructor.
Equivalent: German 27 (in part).

HISTORY

Professor Hormell, Assistant Professor Dietz, Dr. Swain, Dr. Roberts

Courses for Undergraduates

S1a. History of Modern Europe, 1500-1763.—MTWTFS, 8; 305 L. H. (3 for students other than seniors; 2 for seniors). Dr. Swain

Equivalent: The first one-third of History 1a-1b.

S2a. Political History of England, 1066-1603.—MTWT, 9; 305 L. H. (2 for students other than seniors; 1½ for seniors). Assistant Professor Dietz

Equivalent: The first one-third of History 2a-2b.

S3b. American History, 1789-1877.—National organization, the westward movement, the growth of sectionalism, the Civil War, and reconstruction. MTWTF, 8; 311 L. H. (Sec. A); or MTWTF, 11; 305 L. H.. (Sec. B). (2½). Dr. Roberts

Prerequisite: Sophomore standing.
Equivalent: The second one-third of History 3a-3b.

Courses for Advanced Undergraduates and Graduates

(At least junior standing is required for all the courses in this group)

S14. Studies in the Development of American Political Ideals.—Political thought in the eighteenth century; republicanism; democracy; nationalism; nature of the Union; sphere of governmental activities; isolation; international outlook. TWTF, 9; 317 L. H. (2). Professor Hormell

Prerequisite: One year of college history.

S32. Europe in the Twentieth Century.—The system of alliances; the Great War; the Peace Conference; recent developments. TWTF, 10; 311 L. H. (2).

Prerequisite: History 1b or 2b. Dr. Swain

S46. England under Free Trade.—The political and industrial development of England since 1845. MTWT, 11; 311 L. H. (2). Assistant Professor Dietz

Prerequisite: One year of college history.

Courses for Graduates

S101. Research in American History.—Selected problems in the history of the Civil War and Reconstruction. Time to be arranged. (1 unit).
Professor Hormell

S102. Research in English History.—Direction of students engaged in the investigation of special topics. Time to be arranged. (1 unit).
Assistant Professor Dietz

INDUSTRIAL EDUCATION

(See Education)

LAW

Professor Pomeroy, Professor Goble

S7. Persons.—Custody and support of the child, rights of parent with respect to the child, the earnings of the child, emancipation, liability of parent for torts of the child; infancy—infant's power to contract and convey, liability of the infant for torts; husband and wife—rights and powers of each with respect to each other and the property of each other at common law and under modern statutes; marriage and divorce. Kales, *Cases on Persons;* Vernier's supplement, *Cases on Marriage and Divorce.* MTTF, 8; 304 Law. (2). Professor Goble

S18. Wills.—The execution, revocation, and revival of wills; legacies, their lapse, ademption, and satisfaction, executors and administrators; survival of causes of action and claims; administration of estates; gifts; gifts *causa mortis;* rules of descent. Warren, *Cases on Wills,* and Illinois statutes and decisions. MTWT, 9; 304 Law. (2). Professor Pomeroy

S32. Quasi-Contracts.—Nature and scope of quasi-contracts, benefits voluntarily conferred by mistake, in partial performance of a contract, in the absence of a contract; benefits conferred under duress; waiver of tort. Thurston, *Cases on Quasi-Contracts.* TWTF, 11; 304 Law. (2). Professor Pomeroy

S53. Trade Regulation.—Effect of illegality in business transactions; development of common law doctrines of illegal conduct in business; statutory regulation of commerce and industry. Oliphant, *Cases on Trade Regulation.* MTWF, 10; 304 Law. (2). Professor Goble

LIBRARY SCIENCE

Director Windsor, in charge; Miss Bond, Miss Boyd, Miss Gramesly, Miss Goff, Miss Sankee, Miss Hart, Miss Murphy

Application blanks for admission must be secured from the Director of the School; these should be filled out and returned to him, together with such additional statements as the candidate may offer, showing his qualifications for admission. The application must be filed sufficiently early to enable the School to receive replies from librarians and others who have personal knowledge of the applicant.

Eight-Weeks Courses for College Graduates

Courses of the regular two-year curriculum are offered to college graduates who can satisfy the entrance requirements. These courses are accepted for credit toward the B. L. S. degree. Admission to these courses is conditional on the presentation of credentials showing the applicant holds a bachelor's degree in arts or science from the University of Illinois or has had other equivalent training.

S17. Classification and Subject Headings.—The principles of book classification, special emphasis being placed on practice in using the Dewey Decimal Classification. Subject headings are assigned in connection with classification. MTWTFS, 9; (3 semester hours credit). Miss Bond

S18. Cataloging.—A study of dictionary cataloging is followed by a briefer study of classed cataloging. Each student makes a sample catalog of representative books. The American Library Association rules are used as a text. MTWTFS, 8; (3 semester hours credit). Miss Goff, Miss Bond

S20. Loan Department.—The principles underlying the relations of the library to the public brought about by the loan of books, and the character of the service to be rendered; representative loan systems suitable for various types of libraries, and rules, regulations, and practices incidental to the service. WF, 10; (1 semester hour credit). Miss Gramesly

S23a. Library Administration and Current Library Literature.—The current library periodicals, bulletins, reports, etc., are examined, and are reported upon in class. A brief consideration of the administration of small libraries, and the selection of government documents most useful to them. TT, 10; (1 semester hour credit). Miss Gramesly

S30. Practice.—Work in the various departments of the University library. To be arranged. (3 semester hours credit). Miss Bond
Prerequisite: Library 17, 18.

S40. Practice.—Advanced. To be arranged. (3 semester hours credit).
Prerequisite: Senior standing in the Library School. Miss Bond

S43. High School Library Administration.—(2 semester hours credit).
Prerequisite: Library School standing. Miss Sankee

Six-Weeks Course for High School Graduates

These courses are open (1) to librarians, library assistants, and teacher-librarians, and to others under definite appointment to such positions; and (2) to others, with the consent of the Director, who have completed one year of study in a college or normal school. There are no entrance examinations, but in all cases the completion of a four-year course in an accredited high school or its equivalent is required. No credit toward the B. L. S. degree is given for the work, but a statement of grades is issued by the Registrar of the University.

As the number of students who can be accommodated is limited, preference will be given to applicants from Illinois. No application received from persons outside the State will be definitely accepted before May 1; such applications will be filed and held until that date.

The subjects in which instruction is given are grouped under the following heads. Two hours of study are expected of the student in preparation for each class hour. These courses, taken together, occupy all the working hours of the student.

S1. Classification, Cataloging, Book Numbers.—Practice in classifying books according to the Dewey Decimal Classification, and the preparation of a dictionary catalog. Five class hours a week.

S3. Selection of Books.—The principles of book selection, with discussion of the literature of special subjects. Two class hours a week.

S4. Libraries and Children.—Management of children's rooms; work with schools; selection of children's literature, illustrated by the use of a good collection of children's books. Two class hours a week.

S5. Order, Accession, etc.—Order, accession, shelf, and loan records; trade bibliography; the checking of periodicals; mechanical preparation of books; mending and repair. Two class hours a week.

S6. Library Administration and Extension.—Lectures and round table discussion of library rules, accounts, finance, extension methods and laws, and of buildings and equipment. Two class hours a week.

S32. Reference Work.—The more important books of reference, and particularly those suited to small public and high-school libraries. Three class hours a week.

Prerequisite: Employment as librarian or registration in S1.

MATHEMATICS

Professor Townsend, Professor Coble, Assistant Professor Lytle, Dr. Camp, Dr. Libman, Dr. Bender, Mr. Hoover, Mr. Huber, Mr. Hurst

The department offers at least five courses each summer for graduates and advanced undergraduates. These courses vary from year to year so as to enable advanced students to secure a suitable sequence of courses during four or five successive summer sessions.

Mathematics Library and Models

The Mathematics Library now contains more than 6,000 volumes. Fifty current mathematical periodicals are received in addition to a large number of serials devoted partly to mathematics and available in the general library. The Mathematics Library will be open to all students during certain hours of each day except Sunday, but graduate students in mathematics can secure keys which will enable them to use this library whenever the outside doors of the Natural History Building, in which it is located, are open.

A large collection of mathematical models is exhibited in cases located in the halls adjoining the mathematics recitation rooms and the Mathematics Reading Room. This collection includes models relating to the following subjects: Quadratics of all kinds, surfaces of the third and fourth order, surfaces of high orders, line geometry, curves in space, differential geometry, descriptive and projective geometry, analysis situs, mechanics, and kinematics. It also includes devices and machines for mechanical computation, integration, and harmonic analysis.

The Mathematics Club will meet every Friday at 4 p. m. in Room 434 Natural History Hall for the consideration of mathematical questions of general interest, especially questions relating to the teaching and the history of mathematics. These meetings will be open to all students who may be interested and will usually last for an hour.

Courses for Undergraduates

S2. College Algebra.—Text: Rietz & Crathorne's *College Algebra*. MTWTFS, Section A, 9; 418 N. H.; Section B, 10; 425 N. H. (3). Dr. Libman, Dr. Bender
Prerequisite: Two and one-half units entrance mathematics.
Equivalent: Mathematics 2.

S4. Plane Trigonometry.—Text: Rothrock's *Trigonometry*. MTWTF, Section A, 9; 419 N. H.; Section B, 10; 419 N. H. (2).
Professor Coble, Assistant Professor Lytle

S6. Analytical Geometry.—Introductory plane and solid analytic geometry. Text: Crawley and Evans' *Analytic Geometry*. MTWTF, Section A, 8 and 11; 418 N. H.; Section B, 8 and 11; 419 N. H. (5). Mr. Hoover, Mr. Hurst
Prerequisite: Mathematics 2 and 4.
Equivalent: Mathematics 6.

S7. Differential Calculus.—Course for beginners. Townsend and Goodenough's *Essentials of Calculus*. MTWTF, 8 and 11; 425 N. H. (5). Mr. Huber
Prerequisite: Mathematics 6.
Equivalent: Mathematics 7.

S9. Integral Calculus.—Text: Townsend and Goodenough's *Essentials of Calculus*. MTWTFS, Section A, 10; 418 N. H.; Section B, 11; 423 N. H. (3).
Prerequisite: Mathematics 7. Professor Townsend, Dr. Camp
Equivalent: Mathematics 9.

Courses for Advanced Undergraduates and Graduates

S12. Advanced Algebra.—Complex numbers; infinite series; substitutions; selected topics. MTWTF, 11; 435 N. H. (2½). Dr. Bender
Prerequisite: Mathematics 9.

S16. Differential Equations.—Text: Murray's *Differential Equations*. A first course, practically equivalent to the first semester of Mathematics 16. MTWTF, 8; 423 N. H. (2½). Dr. Camp
Prerequisite: Mathematics 9.

S21. Vector Calculus.—Elements of vectors and quaternions. Applications to geometry and physics. MTWTF, 9; 425 N. H. (2½). Dr. Libman
Prerequisite: Mathematics 9.

S35. Teachers' Course.—High-school algebra and geometry; educational value; analysis of content; movements influencing content. MTWTF, 8; 435 N. H. (2½).
Assistant Professor Lytle
Prerequisite: Eighteen hours of college mathematics, or the consent of the instructor for teachers with experience.

Courses for Graduates

S103. Theory of Integration.—A general discussion of the theory of integration, including not only the properties of Riemann integrals, but also of the Lebesgue and other types of integrals. MTWTF, 10; 435 N. H. (1 unit). Professor Townsend

S135. Differential Geometry.—MTWTF, 9; 435 N. H. (1 unit).
Professor Coble

BURRILL AVENUE ON THE CAMPUS

MECHANICAL ENGINEERING

Mr. Degler, Mr. Goff

Courses for Undergraduates

S1 and 2. Steam Engineering.—This course will deal with the operation and performance of boilers and principal auxiliaries, steam engines, steam turbines and power plant equipment. MTWTFS, 7; 208 M. E. L. (3). Mr. Degler

Prerequisite: Courses S1 and 2 will be accepted for credit for M. E. 1 and 2, the prerequisites for which are Math. 9, and Physics 1 and 3. This includes students taking Chemical Engineering, Civil Engineering, Gas Engineering, Municipal Engineering, Railway Civil Engineering, Commerce and Industrial Administration, who have junior standing.

S6. Steam Engineering.—The theory of the steam engine, steam turbine, boilers and power plant machinery. MF, 8; TWT, 8, 9; 208 M. E. L. (4). Mr. Degler

Prerequisite: This course will be accepted for credit for M. E. 6, the prerequisite for which is registration in M. E. 16. Course S6 will also be accepted for credit in M. E. 3, the prerequisite for which is Thermodynamics, M. E. 10. This includes students taking Electrical Engineering, General Engineering and Railway Electrical Engineering, who have senior standing. Students taking S6 for credit in M. E. 3 may waive the requirement of registration in M. E. 16.

S13. Thermodynamics.—Fundamental principles. Properties of gases and vapors. MTWTF, 7; Th, 8; 202 T. B. (3). Mr. Goff

Prerequisite: Mathematics 9, and Physics 1 and 3.

S16. Thermodynamics.—Flow of fluids, steam engines, steam turbines, air compression, refrigeration. MTWF, 8; 202 T. B. (2). Mr. Goff

Prerequisite: Mechanical Engineering 13.

MECHANICS, THEORETICAL AND APPLIED

Professor Seely, Assistant Professor Ensign, Assistant Professor Putnam

S20. Analytical Mechanics.—Statics, kinematics, centroids, and friction. Seely and Ensign's *Analytical Mechanics for Engineers*. MTWTFS, 10; 202 E. H. (3). Assistant Professor Ensign

Prerequisite: Mathematics 7, registration in Mathematics 9.

S21. Analytical Mechanics.—Kinetics. Seely and Ensign's *Analytical Mechanics for Engineers*. TWTF, 1; 202 E. H. (2). Assistant Professor Ensign

Prerequisite: Mathematics 9; Theoretical and Applied Mechanics 20.

S25. Resistance of Materials.—The mechanics and properties of materials used in construction; experiments in testing laboratory; problems. Merriman's *Mechanics of Materials*. Quiz, MTWTFS, 11; 202 L. A. M.; laboratory, MW, 8, 9; L. A. M. (4). Assistant Professor Putnam

Prerequisite: Mathematics 9; Theoretical and Applied Mechanics 20.

For Advanced Undergraduates and Graduates

S41. Advanced Mechanics of Materials.—Special problems met in engineering. Thick cylinders, guns, curved beams, hooks, chain links, rings, unsymmetrical bending, flat plates, resistance to impact loads and to repeated loading; collapsing pressure of thin-walled vessels. Exact versus approximate analysis. Methods of extending approximate analysis. The application of mechanics to special machine parts and structures. MTWTFS, 10; 208 E. H. (3 credits, ½ to 1 unit). Professor Seely

Prerequisite: Theoretical and Applied Mechanics 25 or its equivalent.

S42. Properties of Materials.—Various properties of structural materials; their importance in engineering; methods of determining the properties; influence on properties of methods of manufacture, chemical composition, heat treatment, mechanical working, etc.; specifications and inspection. TWTF, 8; 202 E. H. (2 credits or ½ unit). Professor Seely

Prerequisite: Theoretical and Applied Mechanics 25 or its equivalent.

S44. Laboratory Work in Testing Materials.—Study of testing machines and strain measuring apparatus. Special tests; impact, hardness, repeated stress tests, and tests of special forms. Experimental investigations of assumptions involved in the mechanics of materials. Determination of properties of special materials. Experimental determination of stresses in actual structures in service. MWF, 1-4; L. A. M. (3 credits, ½-1 unit). To be given only if the registration warrants.

Prerequisite: Theoretical and Applied Mechanics 25 or its equivalent.

MUSIC

(For fees see page 12)

Director Stiven, Assistant Professor van den Berg, Mr. Johnson, Mr. Miles

S1b. History of Music.—From the Middle Ages to the Eighteenth Century. Collateral reference work and notebooks. TT, 11; 106 S. M. H. (1). Director Stiven

Prerequisite: The consent of the instructor.

Equivalent: Music 1 (second half).

S3a. Harmony.—Scales-Keys, signatures, drill on scale degrees. Intervals—classification, construction, and analysis of Triads. Triad inversions and progressions; harmonization employing principal Triads. MW, 11; 106 S. M. H. (1).

Prerequisite: The consent of the instructor. Director Stiven

Equivalent: Music 3 (first half).

S4a. Harmony.—Dominant seventh chords and their resolutions; key relations and simple transitions. TT, 8; 103 S. M. H. (1). Director Stiven

Prerequisite: Music S3b or consent of the instructor.

Equivalent: Music 4 (first half).

S13a. Music Appreciation.—The appreciation of good music from the standpoint of the listener. Copiously illustrated with phonograph and reproducing piano. Primarily for students from the other colleges of the University. WF, 8; 103 S. M. H. (1). Director Stiven

S21a. Ear Training and Sight Singing.—Formation and recognition of intervals, melody making and writing; music notation, scale structure, solfeggio. MTWT, 8; 106 S. M. H. (1).

Prerequisite: Entrance credit.

Equivalent: Music 21.

S25b. Public School Methods.—Problems of supervision in the upper grades (5th through 8th); study of material and technic of teaching. MTWT, 9, 10; 106 S. M. H. (4).

Prerequisite: Music S25a, two years of sight singing, and the consent of the instructor.

Equivalent: Music 25b.

S41c-41f. Introductory Course in Piano.—Arrange hours. No university credit. 100 S. M. H. Assistant Professor van den Berg, Mr. Miles

Prerequisite: The consent of the instructor.

Equivalent: Music 41c-f (in part).

S42-46. Piano, Collegiate Grade.—Arrange hours. 100 S. M. H. (1 or 2).
Assistant Professor van den Berg, Mr. Miles

Prerequisite: Three years of piano study.

Equivalent: Music 42-46 (in part).

S47. Piano, Collegiate Grade.—For students in other schools and colleges of the University. Arrange hours. 100 S. M. H. (1).
Assistant Professor van den Berg, Mr. Miles

Prerequisite: Three years of piano study.

Equivalent: Music 47 (in part).

S51c-51f. Introductory Course in Voice.—Arrange hours. 100 S. M. H. (No university credit). Mr. Johnson

Prerequisite: The consent of the instructor.
Equivalent: Music 51c-51f (in part).

S52-56. Voice, Collegiate Grade.—Arrange hours. 100 S. M. H. (1 or 2). Mr. Johnson

Prerequisite: Three years of vocal study.
Equivalent: Music 52-56 (in part).

S57. Voice, Collegiate Grade.—For students in other schools and colleges of the University. Arrange hours. 100 S. M. H. (1). Mr. Johnson

Prerequisite: Three years of vocal study.
Equivalent: Music 57 (in part).

S82-86. Organ.—Arrange hours. 100 S. M. H. (1). Mr. Miles

Prerequisite: Three years of piano study, or the equivalent.
Equivalent: Music 82-86 (in part).

S87. Organ.—For students in other schools and colleges of the University. Arrange hours. 100 S. M. H. (1). Mr. Miles

Prerequisite: Three years of piano study or the equivalent.
Equivalent: Music 87 (in part).

Students desiring to take organ will be obliged to pass without condition the entrance examination for collegiate standing in piano.

Campus Sings.—Wednesday evenings at 7:00, Auditorium steps.

PHILOSOPHY

Assistant Professor Lamprecht

Courses for Undergraduates

S1. Logic.—MTWTFS, 8; 120 L. H. (3).

Prerequisite: One year of university work.
Equivalent: Philosophy 1.

Courses for Advanced Undergraduates and Graduates

S19. Conflict of Ideals in Modern Thought.—MTTF, 9; 215 L. H. (2).

Prerequisite: Two years of university work, or the equivalent; Philosophy 2 or its equivalent.
Equivalent: Philosophy 19 (in part).

PHYSICAL EDUCATION FOR MEN

(See Education)

PHYSICAL EDUCATION FOR WOMEN

Miss Bennett, Miss Hodgson, Miss Errant

S30. Health Education in the Elementary and High Schools.—Health programs and campaigns—posture tests. MWF, 11. (1). Miss Bennett

S31. Gymnastics.—Theory and practice of different systems of gymnastics. TT, 2. (½). Miss Bennett

S32. Theory and Practice of Basketball, Indoor Baseball, Track.—MTWTF, 3. (1). Miss Errant

S33. Girl Scout Work.—TT, 3. (½). Miss Errant

S34. Folk Dancing.—MWF, 2. (½).

S35. Natural Dancing.—MWF, 4. (Open to beginners). Miss Bennett

S36. Playground Course.—TT, 4. Games of lower organization suitable for playground use. Miss Bennett

S37. Swimming.—10, 11, 2, 3, 4, 5. Time to be arranged with instructor. Miss Hodgson, Miss Errant

PHYSICS

Professor Watson, Assistant Professor Williams, Mr. Sanders, Mr. Wall, Mr. Little

S7I. General Physics, (Part I).—Lectures with experimental demonstrations and recitations on mechanics, including the fundamental laws of motion, forces and their effects, equilibrium, etc. (For students in Arts and Sciences). Texts: Kimball's *College Physics*. MWF, 11; Lecture Room, 100 P. L. (1½).
Professor Watson

Prerequisite: Plane geometry and high-school algebra; registration in Physics S8I. Plane trigonometry desired.

Equivalent: S7 (I, II, III) together with S8 (I, II, III) are equivalent to Physics 7a-7b, 8a-8b, or to Physics 9a-9b, 10a-10b for the college year.

S8I. Introductory Laboratory Physics, (Part I).—A laboratory course in physical measurements on mechanics, properties of matter, forces, equilibrium, etc., to accompany S7I. Text: Schulz's *Laboratory Manual*. TTS, 8, 9; 212 P. L. (1½).
Prerequisite: Registration in Physics S7I. Mr. Wall
Equivalent: See S7I.

S7II. General Physics, (Part II).—Experimental lectures with recitations on electricity and magnetism. Text: Kimball's *College Physics*. TTS, 11; Lecture Room, 119 P. L. (1½). Assistant Professor Williams
Prerequisite: See S7I.
Equivalent: See S7I.

S8II. Introductory Laboratory Physics (Part II).—Laboratory experiments in electricity and magnetism to accompany S7II. Text: Schulz's *Laboratory Manual*. MWF, 8, 9; 212 P. L. (1½). Mr. Sanders
Prerequisite: Registration in S7II.
Equivalent: See S7I.

S7III. General Physics, (Part III).—Heat, light, and sound. Text: Kimball's *College Physics*. MWF, 10; Lecture Room, 119 P. L. (1½). Mr. Little
Prerequisite: Same as S7I.
Equivalent: See S7I.

S8III. Introductory Laboratory Physics (Part III).—Laboratory experiments in heat, light, and sound to accompany S7III. Text: Schulz's *Laboratory Manual*. MWF, 1, 2; 212 P. L. (1½). Mr. Wall
Prerequisite: Registration in Physics S7III.
Equivalent: See S7I.

S44a. Electrical and Magnetic Measurements.—Accurate measurement of resistance by commutating Wheatstone bridge, the Carey Foster bridge, and the Kelvin double bridge; insulation resistance; aperiodic and ballistic galvanometers; electric current and quantity; electric capacity. Discussions, recitations, and reports. Four 3-hour laboratory periods, MTTF, 1, 2, 3; 112 P. L. (3).
Assistant Professor Williams, Mr. Sanders

Prerequisite: A course in general physics and calculus.
Equivalent: This course is the equivalent of the first semester of Physics 44a.

S15. Electricity and Magnetism.—Lectures and recitations. This is a comprehensive course for teachers of physics who desire a broader and more accurate knowledge of elementary electrical phenomena and theory than that given in the courses on general physics. Those desiring laboratory in connection with this course are permitted to take two or four 3-hour periods of Physics S44a. Text: Brooks and Poyser's *Magnetism and Electricity*. MWF, 9, and one hour to be arranged; 108 P. L. (2). Assistant Professor Williams
Prerequisite: A course in general physics.
Equivalent: Physics 15 (in part).

THE ARMORY FROM A DISTANCE

S17. Light.—A course of lectures and recitations on reflection, refraction, interference, diffraction and polarization, followed by laboratory experiments on these phenomena, and the theory and use of optical instruments, such as telescopes, microscopes, refractometers, prism and grating spectroscopes, interferometers, etc. Text: Edser's *Light for Students*. TTS, 8; 208 P. L. (1½). Mr. Sanders

Prerequisite: A course in general physics.

Equivalent: Physics 17 (in part).

S18. Teachers' Course.—Discussions of textbooks, reference books, apparatus and methods of conducting instructional work in physics. Manipulative work with glass and apparatus. Selected topics in advanced general physics. TT, 1, 2; 312 P. L. (1). Mr. Little

Prerequisite: A course in general physics.

Equivalent: Physics 18 (in part).

S19. Modern Development of Physics.—Discussion of selected topics in recent developments in physics, with reading of special topics. Designed primarily for high-school teachers who desire some insight into the advances in physics. MWF, 10; 208 P. L. (1½). Mr. Wall

Prerequisite: A year of college physics.

S21. Recent Advances and Applications in Physics.—Popular lectures, illustrated by experiments, on recent advances and applications of physics. These lectures are open to the public and may be attended by those interested. They are to be given by members of the instructional staff and others. One-half hour credit may be obtained by students registering in the course. Brief abstracts of the lectures in addition to an examination of the main facts presented will be required. Th, 6:45-8:00 p. m.; Lecture Room, 100 P. L. (½).

Professor Watson and Mr. Little in charge

The subjects and dates follow:

June 19.—"Singing Tubes," Professor C. T. Knipp
June 26.—"The Atom of the Physicist," Professor J. Kunz
July 3.—"The Atom of the Chemist," Associate Professor W. H. Rodebush
July 10.—"Atomic Models," Assistant Professor E. H. Williams
July 17.—"The Nebulae," Professor R. H. Baker
July 24.—"Weather Forecasting," Mr. E. M. Little
July 31.—"Diffraction of Sound," Professor F. R. Watson

S23. Sound.—Discussion, recitations and problems on the phenomena of sound. MWF, 9; 208 P. L. (1½). Professor Watson

Prerequisite: A year of college physics.

Courses for Advanced Undergraduates and Graduates

S31. Special Problems in Advanced Physical Measurements.—Special laboratory problems such as the accurate determination of the coefficient of viscosity of liquids and gases; of the elastic constants of metals; of the coefficient of self-induction, L, of a coil; of the capacity, C, of a condenser in absolute measure; the calibration of a bridge wire; the use of a dividing engine, etc. Text: Various laboratory manuals. Arrange time. (1, 1½, 2).

Professor Watson, Assistant Professor Williams

Prerequisite: A course in general physics, elementary calculus.

S46. Advanced Electrical Measurements.—A laboratory course in alternating current measurements including the use of vibration galvanometers, alternating current galvanometers, electron tube as a generator, Vreeland oscillator, etc. Two times per week. (1). Assistant Professor Williams

Prerequisite: Physics 44a and 44b or their equivalent.

Courses for Graduates

S131. Investigation of Special Problems.—This course is available for students who are working toward or who have taken their advanced degrees, and consists of

individual special problems which will be under the general supervision of one of the professors. The work done should show originality in method, or should contribute new data in experimental investigation. Arrange time. (1, 1½ or 2).

Professor Watson, Assistant Professor Williams

S133. Seminar and Thesis.

Prerequisite: Registration in Graduate School. See instructor.

PHYSIOLOGY

Mr. Brown

Courses for Undergraduates

S1a. A Survey of the Field of Mammalian Physiology.—Circulation, respiration, vitamines, digestion, metabolism, excretion, nervous system, glands of internal secretion. Lectures, MWF, 9; 229 N. H.; Quiz, TT, 9; 229 N. H.; Laboratory, MWF, 1, 2; 413 N. H. (4).

Equivalent: Physiol. 1 and 2 (in part).

POLITICAL SCIENCE

Professor Hormell, Dr. Berdahl

S1. American National Government.—Historical development, organization, powers, limitations, and practical working of the national government of the United States. MTWTF, 10; 317 L. H. (2½). Dr. Berdahl

Prerequisite: Thirty hours of university work.

S4. Municipal Government.—Legal status of cities; charter-making; types of organization; municipal functions, with emphasis upon financial problems. MTWTF, 8; 317 L. H. (2). Professor Hormell

Prerequisite: Junior standing.

S14. Political Parties.—Political parties and party methods in the United States; party organization and machinery; the convention system; direct primaries; campaign methods; corrupt practices acts; proposals for reform. MTWTF, 11; 317 L. H. (2½). Dr. Berdahl

Prerequisite: Junior standing.

Courses for Graduates

S103. Research in Political Science.—For graduate students who wish to investigate special topics. Conferences to be arranged. (½-1 unit).

Professor Hormell, Dr. Berdahl

Note.—History S14 may be included in the courses offered for a major in Political Science.

PSYCHOLOGY

Assistant Professor Griffith, Mr. Kingsley, Mr. Higginson, Miss Anderson

Courses for Undergraduates

S1. Introduction to Psychology.—The facts and uniformities of mind. Sensation and image, perception, attention, memory, emotion, action, and thought. Experimental methods and their results are illustrated in lecture by demonstrations. This course is preliminary to all other work in the department. Lectures; sectional meetings.

Subject	No.	Credits	Section	Hours	Days	Room	Instructor
Psych.	S1	3	Lect.	9	MWF	410 U. H.	Griffith
			Quiz A	9	TTS	410 U. H.	Kingsley
			Quiz B	10	TTS	212 U. H.	Anderson

Prerequisite: Sophomore standing or consent of the instructor.

Equivalent: Psychology 1 (in part).

S2. General Psychology.—A general survey of the problems and the fields of psychology. The foundations of psychology. Genetic psychology including animal psychology, the mind of the child and the inheritance of mind. Social psychology;

general problems, social groups, social monuments. The psychology of the abnormal; illusions, dreams, telepathy, abnormal and pathological minds, the unconscious. Psychotechnology; psychology in its relations to education, law, medicine, and commerce. Lectures; sectional meetings. MTWT, 10; 208 U. H. (2). Mr. Higginson

Prerequisite: Psychology 1 or senior standing.

Equivalent: Psychology 2 (in part).

Courses for Advanced Undergraduates and Graduates

S13. Minor Problems.—Individual investigations in form of essay or experiment. Arrange. (1-2). Assistant Professor Griffith, Miss Anderson

Prerequisite: The equivalent of Psychology 1 and one other course (preferably training in elementary laboratory experiments) or consent of the instructor.

Equivalent: Psychology 13.

S16. Genetic Psychology.—The principle of genetic continuity applied to mind and to the mind-body capacities. The principal events in the history of mind as revealed by the mind of the animal and of the infant. Special emphasis upon the development of the mind of the child. MTWT, 11; 208 U. H. (2). Mr. Kingsley

Prerequisite: Psychology 1, or the consent of the instructor.

Equivalent: Psychology 16.

S25. Psychology and Athletics.—Designed primarily for students in the curriculum in Athletic Coaching. The application of psychological laws and principles to all forms of athletic competition. MTWTF, 7; 208 U. H. (2).

Assistant Professor Griffith, Mr. Higginson

Prerequisite: Psychology 1, or the consent of the instructor.

Equivalent: Psychology 25 (in part).

Courses for Graduates

S105. Seminar.—Discussion of current topics in their historical setting. Arrange. (1 unit). Assistant Professor Griffith

ROMANCE LANGUAGES

Professor Fitz-Gerald, Professor Carnahan, Assistant Professor Van Horne, Assistant Professor Hamilton, Mrs. Butler, Miss Pierson

A. FRENCH

Courses for Undergraduates

S1. Elementary Course.—Pronunciation, grammar, reading of easy prose. Section A, MTWT, 8, 9; 117 L. H.; Section B, MTWT, 10, 11; 117 L. H. (4).

Assistant Professor Hamilton, Mrs. Butler

For students who have no credit in French.

Equivalent: French 1a, or one year of high-school French.

S2. Modern Prose and Drama.—Rapid reading of modern authors; review of grammar; composition and syntax. MTWTFS, 8; 113 L. H. (3). Miss Pierson

Prerequisite: One year of college French, or the consent of the instructor.

Equivalent: French 2a (in part). Students may earn four credits in second-year French by taking S4 in addition.

S4. Grammar and Syntax.—Special attention to the chief difficulties of modern French syntax. MW, 9; 320 L. H. (1). Professor Carnahan

Prerequisite: At least one year of college French or its equivalent, with a minimum grade of B; or the consent of the instructor.

S7. Intermediate Composition and Conversation.—Study and practice of idiomatic expression in speaking and writing. MTWT, 10; 215 L. H. (2).

Mrs. Butler

Prerequisite: Two years of college French, or the consent of the instructor.

Equivalent: French 7a.

S25. Teachers' Course.—Methods of teaching; grammatical problems. MTWT, 11; 113 L. H. (2). Assistant Professor Van Horne

Courses for Advanced Undergraduates and Graduates

S17. Modern Drama.—Study of French plays of the 19th and 20th centuries. MTWT, 9; 211 L. H. (2). Assistant Professor Hamilton

Prerequisite: Three years of college French, or the equivalent.

Equivalent: French 17b.

Courses for Graduates

S128. The Origin and Development of the French Novel.—Lectures and outside reading. MWF, 8; 216 L. H. (½-1 unit). Professor Carnahan

Prerequisite: Graduate standing, or the consent of the instructor.

S195. Research Work Including Work in Preparation for Thesis.—Hours to be arranged. 216 L. H. (½-1 unit). Professor Carnahan

B. SPANISH

Courses for Undergraduates

S1. Elementary Course.—Pronunciation, grammar, reading of easy prose. MTWT, 9, 10; 113 L. H. (4). Miss Pierson

For students who have no credit in Spanish.

Equivalent: Spanish 1a, or one year of high-school Spanish.

S2. Modern Spanish.—Reading of modern authors, review of the grammar. MTWT, 9; 120 L. H. (2). Assistant Professor Van Horne

Prerequisite: One year of college Spanish, or the consent of the instructor.

Equivalent: Spanish 2a (in part). Students may earn four credits in second-year Spanish by taking S4 in addition.

S4. Grammar and Syntax.—Special attention to the chief difficulties of modern Spanish syntax. MTWT, 10; 120 L. H. (2). Professor Fitz-Gerald

Prerequisite: One year of college Spanish, or its equivalent, with a minimum grade of B; or the consent of the instructor.

Courses for Advanced Undergraduates and Graduates

S17. Modern Drama.—Study of Spanish plays of the 19th and 20th centuries. MTWT, 10; 211 L. H. (2). Assistant Professor Van Horne

Courses for Graduates

S132. The Novela of the Golden Age.—MTWT, 11; 212 L. H. (1 unit). Professor Fitz-Gerald

Prerequisite: Graduate standing, or the consent of the instructor.

S195. Research Work Including Work in Preparation for Thesis.—Hours to be arranged. 212 L. H. (½-1 unit). Professor Fitz-Gerald

SOCIOLOGY

Assistant Professor Sutherland, Dr. Ratcliffe

Courses for Undergraduates

S1. The Principles of Sociology and Their Application to Present Problems.

Prerequisite: Junior standing.

Subject	No.	Credits	Section	Hours	Days	Room	Instructor
Sociol.	S1	3	A	8	MTWTFS	306 L.H.	Ratcliffe
			B	9	MTWTFS	308 L.H.	Sutherland

"THE BONEYARD"

S7. The Social Problems of Agricultural Society.—MTWTFS, 9; 306 L. H. (3). Dr. Ratcliffe

Prerequisite: For students from rural homes, 45 hours; for all others, junior standing.

Courses for Advanced Undergraduates and Graduates

S8. Charities.—Poverty, dependency, charity and social work from the point of view of the sociological concepts: Isolation, contact, interaction, personality. MTWTFS, 8; 308 L. H. (3). Assistant Professor Sutherland

Prerequisite: Sociology 1.

TRANSPORTATION

(See also Business Organization and Operation, and Economics)
Mr. Herrmann

Courses for Advanced Undergraduates and Graduates

S1. Transportation System of the United States.—Its development and its relation to the public. MTWTF, 11; 111 Com. (2½).

Prerequisite: Economics 1 or 2 and junior standing.

Equivalent: Transportation 1.

S12. Rates and Regulations.—The theory and practice of rate-making, conditions governing the shipment of freight by rail; classification; the relationship of rates and service. MTWTF, 10; 111 Com. (2½).

Prerequisite: Transportation 1, or junior standing and the consent of the instructor.

Equivalent: Transportation 12.

ZOOLOGY

Associate Professor Shumway, Dr. Kudo, Mr. Walton, and Assistant

Courses for Undergraduates

S1. General Zoology.—Animal biology; structure and function; origin, development, and interrelations of animals; heredity, evolution. Recitations and lecture. MTWTF, 10; 229 N. H. Laboratory, MTWTF, 8, 9; 312 N. H. (5).
Associate Professor Shumway, Dr. Kudo, Mr. Walton

Equivalent: Zoology 1.

S2. Vertebrate Zoology and Comparative Anatomy.—Evolution of the vertebrate animals of North America; anatomy of the vertebrate organ systems; studies of representative vertebrates. Recitations and lectures. MTWTF, 9; 330 N. H. Laboratory, MTWTF, 10, 11; 330 N. H. (5).

Prerequisite: Zoology 1. Associate Professor Shumway, Mr. Walton

Equivalent: Zoology 2.

S4. Invertebrate Zoology.—Morphology of a series of invertebrates; invertebrate structure and development; the application of biological principles. Lecture and quiz, MWTF, 9; Laboratory, Tu, 8, 9; S, 8, 9, 10, 11; 310 N. H. (3).

Prerequisite: Zoology 1. Dr. Kudo and Assistant

Equivalent: Zoology 4.

Courses for Advanced Undergraduates and Graduates

S63. Comparative Vertebrate Embryology.—Comparative studies of cellular embryology, the germ-layers and early organogeny; practice in the technical methods of the subject. Lectures, assigned reading, reports and laboratory. (2-4). Hours to be arranged. Associate Professor Shumway

Prerequisite: Senior standing and Zoology 2.

Courses for Graduates

S126. Embryology and Cytology.—Individual research course. Time to be arranged. (1-2 units). Associate Professor Shumway

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